SOME PROBLEMS IN MEASURING FOOD ASSISTANCE PROGRAM IMPACTS ON STATE AND LOCAL ECONOMIES

Doris J. Epson

Paul E. Nelson

U.S. Department of Agriculture

Economics, Statistics, and Cooperatives Service

ESCS- 85

50272-101

REPORT DOCUMENTATION PAGE

1. REPORT NO. ESCS-85

2.

3. Recipient's Accession No.

4. Title and Subtitle
SOME PROBLEMS IN MEASURING FOOD ASSISTANCE PROGRAM IMPACTS ON STATE AND LOCAL ECONOMIES

5. Report Date
August 1980

6.

7. Author(s)
Doris J. Epson and Paul E. Nelson

8. Performing Organization Rept. No.
ESCS-85

9. Performing Organization Name and Address
National Economics Division
Economics, Statistics, and Cooperatives Service
U.S. Department of Agriculture
Washington, D.C. 20250

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address

13. Type of Report & Period Covered

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

The estimated impact of food assistance programs on any particular economy cannot be applied precisely to another. National impacts are not identical to those at either State or local levels. National-level economic models, even when adjusted, are not as suitable for accurately measuring State or local impacts as survey-based models tailored to local or State economies. Even local models require adjustments to yield accurate multipliers (units of measurement of impacts of dollar infusions into an economy). Adjustments for local models needed to yield accurate impact measurements are provided.

17. Document Analysis a. Descriptors
Multipliers
Local economies
Food assistance programs
Input/output models
Program impacts

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group 02-B, and 05-C

18. Availability Statement Available from:
NATIONAL TECHNICAL INFORMATION SERVICE
5285 Port Royal Road, Springfield, Virginia 22161

19. Security Class (This Report)

20. Security Class (This Page)

21. No. of Pages

22. Price

(See ANSI-Z39.18) See Instructions on Reverse OPTIONAL FORM 272 (4-77) (Formerly NTIS-35) Department of Commerce

Washington, D.C. 20250

August 1980

CONTENTS

	Page
SUMMARY	1
OBJECTIVES	1
BACKGROUND	2
MODEL ALTERNATIVES AND DATA SOURCES	2
MULTIPLIERS	3
Final Demand	3
Multipliers Compared	4
EXPLANATION FOR DIFFERENCES IN MULTIPLIER SIZE	6
Composition	6
Leakages	7
Fund Flowbacks	10
Technological Change	10
FOOD ASSISTANCE PROGRAM ANALYSIS--NECESSARY MODEL ADJUSTMENTS	11
PROBLEMS LINKED TO TECHNICAL COEFFICIENT CHANGES	11
CONCLUSIONS	11
REFERENCES	12
APPENDIX TABLE	13

ACKNOWLEDGMENTS

The authors wish to acknowledge the reviews made by Herbert W. Grubb, Department of Water Resources, Planning and Development Division, State of Texas; John S. Perrin, Hereford, Tex.; William T. Boehm, Council of Economic Advisers; and Gerald Schluter, Economics, Statistics, and Cooperatives Service.

Some Problems in Measuring Food Assistance Program Impacts on State and Local Economies

*Doris J. Epson and Paul E. Nelson**

SUMMARY

Multipliers used to estimate the impact of food assistance programs differ among and within States according to model specifications. Thus, no single multiplier can accurately measure net impacts for *all* States and counties. Consequently, a partially closed model will yield multipliers different from those derived from an open model because of induced effects.

Differences in the sizes of sector multipliers depend upon each economy's composition, leakages from imports, fund flowbacks from exports, and comparative rates of adoption of technology among its sectors.

The most accurate estimates can be made from survey-based State and county models that are partially closed. In addition, program-related tax adjustments must be made for the nonparticipant household sector.

Changes in production functions associated with the introduction of new technologies, or shifts in sources of energy, change the technical coefficients of any input/output model. When such changes are substantial, the model must be respecified using the most current data collected from the economy to which the model is being applied.

OBJECTIVES

This report aims to expand user awareness of important methodological considerations when interpreting and applying input/output analysis, and reduce misuse of multipliers in deriving estimates of economic impacts at State and county levels.[1]

This information is primarily addressed to staff professionals who interpret economic impact data for specific clientele. For example, many community action agencies communicate program analysis data to such associations as business and civic groups and labor organizations. The Extension staff of the Science and Education Administration, U.S. Department of Agriculture, performs similar communication functions in passing on information and interpretations to farm and rural community groups.

[1]Whenever a State or county is analyzed to determine economic impacts, each is treated as an economy. Thus, any flow of commerce into that economy is an import, and any flow from it to any other State, county, or Nation is treated as an export.

*Epson is an economist and Nelson is an agricultural economist with the Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture.

BACKGROUND

Food bonus stamp expenditures in 1972 resulted in a net gain of $838 million in business receipts. Gross national product (GNP) rose by a net $311 million. The latest corresponding figures were $2.3 billion and $838 million, respectively (*10*, *11*).[2] The identification of these net economic impacts upon the Nation's economy stimulated interest in determining corresponding figures for State and county economies. Such estimates were generated by some users, both by adapting national figures improperly, and by incorrectly assuming that the multipliers for one State could be applied directly to any other State or county economy.

[2]Numbers in parentheses refer to references listed at the end of this report.

MODEL ALTERNATIVES AND DATA SOURCES

Regional input/output models have most frequently been used to make impact studies of local or regional economies (*9*, p. 69). These models are derived either by basing them upon input coefficients taken from a national table (*9*, p. 66), or by collecting data locally which could be used with data from secondary sources (*4*, p. iv).[3]

Regional models that use national coefficients necessarily assume that production functions for various industries are uniform throughout the Nation. Comparisons of utility bills in New England with those in the Sun States (for example, Florida, Arizona, New Mexico, and California) document the fragility of this assumption (*14*, p. 143). Use of national coefficients in a regional context permits neither the accurate specification of amounts needed per unit of output nor the regional source of the inputs.

National coefficients differentiate only between inputs (imports) originating from outside the Nation (State) and inputs coming from within the national (State) boundaries. For example, the national model makes no attempt to differentiate inputs originating in Texas from those originating in West Virginia.

For regional analysis, however, it is critical to know to what extent the inputs used within a region originated in that region. Any inputs originating outside the region (State boundary) must be treated as imports flowing into that region. Such regional information is not available from a national input/output model.

[3]The term "secondary" applies to any data sources other than the questionnaires directly collected from businesses and public agencies for the purpose of building an input/output table. Thus, while the Bureau of the Census collects and publishes data, often at a level of aggregation directly of use by persons building the input/output table, such aggregated data are considered to be "secondary" by the model builders.

For these and other reasons, we treat only those State models that are derived from field studies and conducted within the boundaries of the State's economy (see *14*, pp. 140-147, for additional reasons). The State studies include: Colorado, Georgia, Kansas, Nebraska, Texas, Washington, and West Virginia. Standard Industrial Classification groups varied among these States from 32 to 183 sectors, including final demand sectors. In view of such diversity, a uniform sector classification scheme utilizing 10 sectors was developed for the purposes of this report. This classification scheme presents the economic activities included within each sector for each State economy treated.

The 10 sectors chosen for the interstate comparisons are: agriculture, forestry, and fisheries (AFF); mining; construction; food manufacturing; nonfood manufacturing; all transportation; all services; trade (retail and wholesale combined); all utilities; and households. The extent of aggregation needed to obtain this 10-sector model for comparisons ranged from 28 sectors for Colorado to 175 processing sectors for Texas.

Appendix table 1 reports each economic activity that falls within the AFF sector. Figure 1 indicates how the classification is structured and reported in appendix table 1. Thus, to fall within the AFF sector, the economic activity must be part of the Standard Industrial Classification major groups 01, 02, 07, 08, and 09.[4] Texas has the most complete set of economic activities, with at least one from each of the major groups. In contrast, Nebraska carries economic activities only from major group 01.

[4]The major group codes reported under Industry Sectors, column 1, and the four-digit codes, all come from either the 1967 or the 1972 editions of the *Standard Industrial Classification Manual.* The codes reported under columns headed State sector number identify State sector codes as they were listed in the original State tables; for example, Texas 1-17.

Appendix table 1 reports corresponding classifications for 10 sectors in each State. Both the 1967 and 1972 codes at the four-digit level are used, depending upon how each State reported its sectors.

Figure 1--Illustration of use of Standard Industrial Classification (SIC) codes for sector definition

Industry sector	State sector number	Texas	State sector number	Nebraska
Agriculture, forestry, and fisheries 01, 02, 07, 08, 09	1-17	0131,0111-2,0115-6,0119 0113-4,0139,0161,0171-5, 0179,0191,0271-2,0279,0291, 0212,0214,0219,0211,0213, 0241,0729,0251-4,0259,5191, 0724,071,0721-3,0741-2,0751-2, 0761-2,0781-3,0971,0811, 0821,0843,0849,0851,0912-3, 0919,0921.	1-3	01, 014 (in part)

MULTIPLIERS

Multipliers are units of measure which show the extent to which processing sectors are affected by changes in inventory accumulations, exports to other economies, government purchases, gross capital formation, and in certain cases, personal consumption expenditures.

Final Demand

The final demand sector receives and uses all goods and services without further trading or resale of materials. Components of final demand in the conventional input/output model include households; the local, State, and Federal governments; net inventory change; private and public capital formation; and exports (*4*, p 45). Final demand is where change occurs. The changes in final demand are transmitted throughout all production (processing) sectors (*9*, p. 13). Each sector interacts with at least one other sector, and no sector is completely self-sufficient. The impacts result from the interaction of every sector with one another, and with those of every other sector. Production changes by processing sectors that were stimulated by changes in final demand result in the multiplier effect. This report concentrates on income (final demand) multipliers derived from both open and closed models.

An open (conventional) model's final demand sector includes those components cited above. An open model provides estimates of the total output required of any specified sector, given a $1 change in final demand for the products and services provided by any other sector(s) in the economy. This estimate constitutes the direct-plus-indirect requirements needed by all processing sectors per dollar of sales from each processing sector to final demand, and when summed for each sector, constitutes the sector open model multiplier (*4*, p. 95).

The closed model (usually only partially closed), involves moving one (or more) of the components of final demand so that it becomes one among all the other processing sectors. Households often are treated in this manner, as such treatment enables measurement of the full impact on households of a change in final demand. The movement of the household sector enables an accounting of the part households play as sellers of their labor in return for wages. Increases in wages, in turn, are used to buy additional goods and services.[5] These changes in household income result in changes in household consumption of outputs and services purchased by other sectors of the economy; that is, because of increased purchases by households, additional quantities of goods and services are produced. This addition is called the induced effect and may be identified only by the use of a partially closed model.

[5]Of course, if wages decrease, the closed model also measures the negative impacts.

The sum of the direct-plus-indirect-plus-induced effects for each sector constitute that sector's closed model multiplier.

The total direct-plus-indirect-plus-induced effects of income paid directly to households, which result in the additional purchase of goods and services, best identify the impact of any transfer program. Thus, the partially closed model is better than the open one for identifying the impacts of food assistance programs.

Multipliers Compared

Tables 1 and 2 respectively report multipliers for open and closed models. Comparisons among States are possible for all 10 sectors.[6] However, the report focuses on trade, food manufacturing, and agriculture, forestry, and fisheries—the sectors directly experiencing increased sales as a result of the implementation of food assistance programs.

These State multipliers vary substantially by State as well as by kind, that is, Type I versus Type II. For Type I multipliers, Washington State and Colorado frequently established the range from the smallest to the largest coefficient for the specified sector. Washington State reports 0.85 and Colorado 2.04 for the AFF sector. Correspondingly, food manufacturing ranges from 0.66 to 2.97. The range is 0.93 to 2.09 for the trade sector (table 1).

Corresponding Type I multipliers for each of the other States fall within the range established by these two States with a few exceptions, which include manufacturing where the largest coefficient (1.61) is reported by Texas, and all transportation (1.67) which is posted by Nebraska (table 1).

Washington State posted the lowest multipliers for all but the trade and all services sectors for Type II multipliers. West Virginia posted a 1.45 for the former, and Colorado a 1.27 for the latter. Texas reported the highest coefficients except for mining and food manufacturing. Kansas reported the highest for both of these sectors (table 2).

[6]Some States reported one or more sectors whose composition matched the definition of the sector in appendix table 1. The multiplier cited in the State's report was adopted for such sectors. All other sectors required aggregation of component economic activities. A weighted mean multiplier for the sector was calculated. The weights for open model multipliers were the component's total final demand. Closed model multipliers derived from total final demand, from which the final demand for the household sector had been deducted. Kansas was the only State reporting closed multipliers but no open ones.

Table 2 also shows that the coefficient for the household sector ranges from a low of 1.67 for Washington State to a high of 3.22 for Texas. Note that an injection by transfer into an economy that has a household sector multiplier of 1.67 will result in a substantially lower economic impact than when the corresponding household multiplier is 3.22. Georgia, West Virginia, and Colorado did not report Type II coefficients for their household sectors. Table 2's coefficients always are the larger when compared with those of table 1 for the same State, because the partially closed model captures the induced effects as discussed above. Thus, for example, Washington's AFF sector's coefficients are 0.85 for the open model and 1.44 for the closed model. Corresponding comparisons for other sectors are: food manufacturing, 0.66 and 1.17; and trade, 0.93 and 1.55. In like manner, the comparisons for Colorado are: AFF, 2.04 and 2.37; food manufacturing, 2.97 and 3.54; and trade, 2.09 and 2.49. All other States have a similar relationship between their Type I and Type II multipliers.

These data show that Type I and Type II multipliers vary in size among the States, and that Type II multipliers for the same sector and State always are larger. States have similar or identical coefficients only by coincidence. For example, West Virginia and Georgia Type I multipliers for trade are 1.21 and 1.23, respectively (table 1). However, their respective Type II multipliers are 1.45 and 2.59 (table 2).

Table 1--State open model multipliers

Industry sectors	Texas	West Virginia	Washington	Georgia	Colorado	Nebraska	Kansas
				Multiplier			
Agriculture, forestry, and fisheries	1.90	1.65	0.85	1.42	2.04	1.58	1/
Mining	1.35	1.22	.73	1.31	1.51	1.29	1/
Construction	1.57	1.47	.67	1.49	2/	1.58	1/
Food Manufacturing	1.98	1.65	.66	1.68	2.97	2.05	1/
Nonfood Manufacturing	1.61	1.28	.59	1.35	1.33	1.14	1/
All transportation	1.49	1.17	.85	1.29	3/	1.67	1/
All utilities	1.64	1.48	.88	1.34	1.22	1.15	1/
Trade (wholesale and retail)	1.35	1.21	.93	1.23	2.09	1.25	1/
All services	1.36	1.26	.91	1.41	1.43	1.18	1/

1/ Not reported.
2/ None listed.
3/ Included in "all utilities."

Sources: (1, 2, 3, 7, 8, 12, 13).

Table 2--State closed model multipliers

Industry sectors	Texas	West Virginia	Washington	Georgia	Colorado	Nebraska	Kansas
				Multiplier			
Agriculture, forestry, and fisheries	3.66	2.07	1.44	2.69	2.37	2.49	2.76
Mining	2.60	1.53	1.22	2.25	1.80	2.11	4.18
Construction	3.32	1.86	1.12	2.53	1/	2.65	2.15
Food Manufacturing	3.06	2.00	1.17	2.58	3.54	2.91	6.41
Nonfood Manufacturing	2.76	1.59	.70	2.24	1.59	1.89	2.13
All transportation	3.37	1.46	1.41	2.72	2/	2.15	1.58
All utilities	3.18	1.91	1.48	2.26	1.45	2.15	2.00
Trade (wholesale and retail)	3.00	1.45	1.55	2.59	2.49	1.86	1.94
All services	3.50	1.50	1.53	2.74	1.27	2.78	1.84
Households	3.22	3/	1.67	3/	3/	2.44	2.12

1/ Not listed.
2/ Included in "all utilities."
3/ Not reported.

Sources: (1, 2, 3, 7, 8, 12, 13).

Consequently, the application of any State's multipliers to another State almost certainly will yield questionable results. Note that the application of any of the household multipliers of one State to another would result in incorrect estimates of impact of any transfer program because of their wide variations in size.

EXPLANATION FOR DIFFERENCES IN MULTIPLIER SIZE

Tables 1 and 2 document the substantial differences found in the size of multipliers among the States. These differences persist because a multiplier's magnitude is dependent upon each economy's composition, leakages from imports, fund flowback from exports, and comparative rates of adoption of technological advances among its sectors.

Composition

An economy's productivity is linked directly to its available resources and to its work force. Availability of resources places an upper limit on total output and affects what is produced. If the resources needed to produce high quality glass are not available, sectors which might produce art objects from high quality glass would not develop as extensively without access to basic glass inputs; that is, there probably will not be a cultural focus which emphasizes elaboration of glass design and artifacts.[7] The cultural focus will be upon sectors where the resources are available. For example, historically, Japan's economy had a resource base which could support the arts, philosophy, and religion as well as industrial development with all of the products associated with industrial activities. For centuries, while developing both arts and industry, Japan's cultural focus emphasized the arts, philosophy, and religion. With the arrival of Admiral Perry and contact with the West, this emphasis changed to more resource allocation to industrial activities and sectors.

Similar resource constraints and the cultural focus of the Nation's economy are mirrored in the State economies. The activities carried on within the States are consistent with the national economy's technological focus. However, the extent of activities each State pursues are constrained by the quantity and quality of the resources readily available to it. In turn, the size of the sector multipliers in each State reflects the concentrations of economic activity which resources and cultural focuses impose.

Specifically, if economies have broadly based AFF, food manufacturing, and trade sectors, then any change in the final demand for food will exert an important economic impact. A State having a high proportion of its total economic activity accounted for by these food-related sectors will receive a much greater economic jolt from a change in final demand for food products than will States in which these sectors are either missing or small.

Tables 3 through 6 illustrate the great diversity among State economies, with the focus upon food and kindred product manufacturing and the food trade sectors. Of course, the same kind of diversity is characteristic of the service, transportation, and public sectors. The illustration, however, is sufficient to stress the importance of economic diversification as a factor contributing to the different magnitudes of multipliers, which for the same sectors vary from State to State, as tables 1 and 2 show.

Table 3 compares the share of total food and kindred products, value added by manufacture (attributable to the seven States that account for the greatest proportion of the Nation's food and kindred products processing) with the seven States which maintain relatively recent State survey-based input/output models. Texas is represented in both groups. In total, the former group accounts for 46.3 percent of the value added by manufacture for food and kindred products sectors, while the latter group accounts for only 13.3 percent, of which Texas has 4.8 percent. Except for Texas, the economies of the States comprising the survey-based group would not feel as great an economic impact from a change of $1 in final demand as the former group. However, further disaggregation reveals important differences within the food and kindred products sector.

Data in table 4 reveal that California is quite strong in all component parts of the food and kin-

[7]"Cultural focus designates the tendency of every culture to exhibit greater complexity, greater variation (elaboration) in institutions of some aspects than in others." Early Egypt elaborated its economic-political-religious institutions. Rome's emphasis was upon the principles of organization. This emphasis upon principles was reflected in its Senate's and Army's structures. Today, the United States focuses upon the technological and economic facets of life (*5*, p. 542).

Table 3--Share of total food and kindred product sector's value added by manufacture

Category and State	Value added	Category and State	Value added
	Percent		Percent
Highest seven States:		States with survey-based model:	
California	11.3	Colorado	1.4
Illinois	8.8	Georgia	2.3
New Jersey	4.2	Kansas	1.2
New York	6.5	Nebraska	1.6
Ohio	4.9	Texas	4.8
Pennsylvania	5.8	Washington	1.7
Texas	4.8	West Virginia	.3
Total	46.3	Total	13.3

Source: Computed from (16).

dred products sector, ranging from a low nationwide share of 6.1 percent for meat products to a high of 21.7 percent for fruits and vegetables. Of the remaining components, five of seven account for at least 10 percent of the Nation's value added by manufacture.

In contrast, New Jersey has three components that are substantially stronger than all of its others with respect to its share of total value added. Fats and oils, bakery products, and miscellaneous food products account for 5.7, 6.2, and 10.6 percent, respectively. This means that an increase in the final demand for products of these food sectors will aid New Jersey's economy more than an equivalent increase in final demand for any of the other components of New Jersey's food and kindred products sector.

In the case of States with survey-based models (Texas excluded), only Nebraska accounts for as much as 5.2 percent of the Nation's value added in food and kindred products processing (table 5). Of food and kindred products sector components, Nebraska would be assisted particularly by a nationwide increase in final demand for meat products.

Comparisons of the data in tables 4 and 5 suggest that the multipliers for components of the food and kindred products sector will vary substantially among States because of the different composition of each State's economy. Table 6 carries the comparison to the farm/ranch level of activity.

Table 6 contains the farm/ranch cash marketings of crops plus livestock for the same two groups of States. While the two groups account for more equal shares of the Nation's total output, the first group remains stronger, registering 39.4 percent of the Nation's total cash receipts for marketings at farm level in contrast to the second group's 21.3 percent (table 6).

Leakages

There is no leakage when the final demand for any product or service increases within a State economy and the State produces a sufficient amount to meet that demand. Some leakage from the State economy occurs whenever the increase forces the State economy to import to meet any or all of that increase. For example, assume an increase in the final demand for processed fruit and vegetable products in the Kansas economy; also assume that Kansas cannot supply the increase in its final demand for these products from within its own economy. The amount of imports constitutes a leakage. As Kansas provides a very small amount of its final demand from this sector, such a final demand increase will have a low or negligible impact upon the Kansas economy. California, in contrast, would receive a substantially greater impact because it is essentially self-sufficient in fruits and vegetables.

Table 4--Share of total food and kindred products value added by manufacture, by kind of processors, for highest seven States

Standard Industrial Classification Category	California	Illinois	New Jersey	New York	Ohio	Pennsylvania	Texas	Total
	Percentage of Nation's total value added							
201 Meat products	6.1	6.5	2.3	3.9	4.0	4.7	5.2	32.7
202 Dairy products	7.7	6.0	1.7	6.8	6.5	7.3	3.5	39.5
203 Processed fruits and vegetables	21.7	5.2	4.2	7.7	4.9	6.7	2.9	53.3
204 Grain mill products	8.5	14.1	.4	4.4	5.0	3.8	5.6	41.8
205 Bakery products	10.0	9.5	6.2	6.8	6.5	8.5	4.0	51.5
206 Sugar and confectionery	10.8	17.4	3.9	10.0	2.0	13.2	2.2	59.5
207 Fats and oils	12.2	15.0	5.7	2.3	7.1	1.6	7.2	51.1
208 Beverages	11.7	7.1	4.7	8.7	4.8	3.6	5.3	45.9
209 Miscellaneous foods	13.8	8.7	10.6	5.7	3.8	4.1	8.8	55.5

Source: Computed from (16).

Table 5--Share of total food and kindred products value added by manufacture, by kind of processors, for States with survey-based input/output models

Standard Industrial Classification category	Colorado	Georgia	Kansas	Nebraska	Texas	Washington	West Virginia	Total
	Percentage of Nation's total value added							
201 Meat products	2.9	2.8	2.8	5.2	5.2	1.2	1/0.5	20.6
202 Dairy products	.9	1.3	1.0	.7	3.5	1.4	3.7	12.5
203 Processed fruits and vegetables	.2	.9	1/.2	1/.1	2.9	1/.1	3.8	8.2
204 Grain mill products	.6	1.6	3.0	4.1	5.6	1.3	1/ .1	16.3
205 Bakery products	1.5	3.7	1.1	.5	4.0	.9	.8	12.5
206 Sugar and confectionery	2.0	3.3	1/.3	1/.9	2.2	.9	0	9.6
207 Fats and oils	.5	3.4	1.9	.9	7.2	.5	0	14.4
208 Beverages	2.3	2.5	3.8	3.5	5.3	1.4	.3	19.1
209 Miscellaneous foods	.7	2.3	.8	.8	8.8	2.5	0	15.9

1/ The Census Bureau did not publish figures for these cells because of disclosure problems. Estimates are based on other States. The Census of Manufacturers did not report any output for West Virginia for the SIC industries: 206, 207, and 209. Source: Computed from (16).

Table 6--Share of U.S. farm cash receipts for crop-plus-livestock marketings by State, 1972

Category and State	Farm cash receipts	Category and State	Farm cash receipts
	Percent		Percent
Highest seven States:		States with survey-based models:	
California	8.5	Colorado	2.6
Illinois	5.3	Georgia	2.3
Iowa	7.3	Kansas	4.4
Kansas	4.4	Nebraska	4.1
Minnesota	4.7	Texas	6.1
Nebraska	4.1	Washington	1.6
Texas	6.1	Virginia	.2
Total	39.4	Total	21.3

Source: Computed from (15).

Usually the smaller the economy, the less will be its diversity and the greater will be its leakage. Community-sized economies generally have greater leakages than a county, a county greater than a State, and a State greater than the Nation. Of course, if a county is part of a central city, it will tend to have greater leakages than the central city which incorporates a greater area and has greater diversity, for example, Cook County, Ill., which contains Chicago.

A small economy characterized by a single sector with extreme concentration can have a multiplier as high or higher than that of a corresponding sector of an economy of larger size but less concentration. The City of Seattle is the site of the Boeing Aircraft Corporation. Boeing substantially affects the Seattle economy and, hence, gives a boost to the final demand multipliers of the city. Consequently, the final demand multipliers for several Seattle sectors may be higher than the corresponding multipliers for the State of Washington as a whole. The following comparison of Texas State and locality multipliers may illustrate this type of situation.

Table 7 shows comparisons of closed model multipliers for Texas and for communities located within Texas. The community multipliers are derived from national model data and may even be higher than corresponding multipliers, which could be derived from the Texas survey data base used for the Texas State multipliers. However, the community multipliers also may be higher than the State's because the computational process in moving from national to lower level models may not fully capture the leakages occurring at the lower level.[8] As discussed before, the use of a national model includes the assumption that production functions that adequately represent the national economy also hold for the Nation's component economies. The difference in utility costs between Maine and Texas suggests the weakness of this assumption.

In the leather goods sector, Kellin-Temple and Austin both have larger multipliers than the coefficient found for Texas. Kellin-Temple's multiplier is 2.425, Austin's is 2.481, and the State's is 2.406 (table 7). It is unlikely that the concentration of activity in either Austin or Kellin-Temple is sufficiently high to explain this difference in coefficient size. The greater likelihood is that the multipliers derived by using the national model did not capture leakages which the more sensitive Texas State model did (5). In each of the other sectors, as expected, the Texas State multiplier is the largest.

[8]The closed model multipliers reported for Texas localities do not include a discrete multiplier for the household sector. *Guideline 5* does not explicitly state whether the household's direct, indirect, and induced coefficients have been allocated across the other 56 sectors reported. If they were so allocated, this would partially explain the difference in size (*17*).

Table 7--Comparisons of closed model multipliers for the State of Texas and specified State localities

Localities	Closed model multipliers by sector			
	Meat products (SIC 201)	Prepared animal feeds (SIC 204)	Leather products (SIC 31)	Trade (SIC 50-59)
BEA-based localities		Multiplier		
Wichita Falls	2.548	1.702	2.913	2.127
Amarillo	2.510	1.981	1/	2.039
Lubbock	2.532	1.805	2.205	2.046
Odessa	2.701	1.669	2.304	2.236
Abilene	2.543	1.794	2.256	2.088
San Angelo	2.464	1.786	1.521	2.018
Dallas	2.406	3.078	2.382	3.153
Kellin-Temple	2.802	1.908	2.425	2.341
Austin	2.727	2.019	2.481	2.560
Tyler	3.093	2.306	1/	2.500
Texarkana	2.870	2.802	1/	2.271
Texas survey-based model	4.218	3.476	2.406	3.000

1/ Section not present in region.
Sources: (4, 17).

Fund Flowbacks

Whenever any economy (county, State, Nation) produces more than it needs, its exports of this surplus trigger a flow of funds back from the purchasers. Thus, an increase in final demand for processed fruits and vegetables in Kansas, while resulting in a leakage for Kansas, simultaneously creates a flowback of funds to California, provided the Kansas imports originated in California.

The important point is that any changes in final demand nationally will affect local economies according to the leakage-flowback characteristics of each locality. Again, for example, Seattle historically has had its community fortunes closely related to Boeing's sales. A direct cutback in the final demand (nationally) for Boeing's products, such as in defense contracts, immediately injures Seattle. If Seattle had a more diversified economy, the change in final demand just described, while painful, would not be as devastating. The more diversified the economy, the greater is its capacity both to absorb a setback in a particular sector and also to attract greater growth overall. Diversity encourages symbiotic sector relationships; that is, diverse economies encourage agglomeration of related economic activities.

Technological Change

Whenever technology within a sector(s) changes substantially, all relationships between this sector and all other sectors change. These changes show immediately in both the transactions and direct requirements tables. Any input/output transactions table shows the amounts which each sector sells to and simultaneously buys from every sector, including itself. Any direct requirements table shows what each sector must buy from itself, as well as every other sector, in order to produce one additional unit of product or service.

The shift from horses to the tractor as the major source of power for farm operations illustrates one of the major changes in technology of recent decades—it primarily took place from about 1918 through 1940. Thus, as fewer horses were needed, oat acreage used to grow feed for horses was freed to grow food for people. Simultaneously, purchases from sectors providing petroleum products used by farm machinery increased, and the number of garage mechanics grew as the number of blacksmiths declined. Consequently, the kinds and quantities of products and services sold to each sector and bought by each sector changed as the transformation from the horse to the internal combustion engine took place. Of course, the rate of substitution determined the extent to which the technical coefficients changed in any specified time period.

Such changes always are reflected in the multipliers, which of course reflect the interrelationships among sectors as expressed in the transactions and direct requirements tables. Changes in technology currently underway, which are at least comparable to the switch from horses to tractors, are those linked to the energy crisis. Current changes in the production functions are affecting the technical coefficients, and hence the multipliers, because energy is central to the activities of all sectors. New Hampshire's economy will be harder hit by an energy shortage than will Mississippi's.

FOOD ASSISTANCE PROGRAM ANALYSIS—NECESSARY MODEL ADJUSTMENTS

If a State has a closed model, certain alterations are needed for it to capture accurately the full sector-by-sector economic impact of a public assistance transfer program—food or any other. Given the closed model, needed adjustments include:

1. Identification of the population receiving assistance,

2. Identification of the population not receiving assistance, and whose members are the ones from whom taxes will be collected to pay for the assistance (assuming there is no deficit financing planned),

3. The derivation of an independent transaction's table column and row for each population set described by (1) and (2),

4. Adjustment of the column for the population set not receiving assistance to reflect taxes taken from them in an amount needed to finance the transfers made to the recipients of assistance, and

5. The injection of the amount of assistance to be distributed to program participants in the appropriate recipient sectors' final demand row and column cell.

The total output may be computed given these adjustments. Then from the computed total output, substract the total output computed from the unadjusted model. Subtraction of the totals, one column from the other, will yield net differences or impact for each specified sector. The algebraic sum for all sectors will provide the total impact upon the economy under investigation. Note some sectors will experience negative impact.

PROBLEMS LINKED TO TECHNICAL COEFFICIENT CHANGES

Previous discussion has shown that when technology changes, the technical coefficients change. When technical coefficients change substantially, a new input/output model is required to provide relevant results. There is very great probability that these data do not incorporate the technological changes linked to the energy shortages since 1976, because most State models are based on the 1963 or 1967 collections of data. Thus, persons using these earlier models do so at great risk, particularly for periods from 1977. Results for 1977 and following years, which are derived from existing models based on 1963 or 1967 data, must be viewed with skepticism.

CONCLUSIONS

Estimates of net economic impacts cannot be made using a single multiplier. Sector multipliers of any economy are applicable to the corresponding sectors of any other economy only by happenstance.

Properly adjusted survey-based State and county models may be used to make accurate estimates of the net economic impact of food assistance programs, providing the data incorporated in the model represent the State or county economy's existing technology. However, 1972 data are the latest incorporated in an operational State survey-based model. The developing energy shortage means that current-model estimates are probably not accurate.

REFERENCES

(1) Borque, Philip J., and Richard S. Conway, Jr. *The 1972 Washington Input/Output Study.* Seattle: University of Washington, Graduate School of Business Administration, June 1977.

(2) Emerson, M. Jarvin, and others. *The Interindustry Structure of the Kansas Economy,* report no. 21. Manhattan: Office of Economic Analysis and Kansas Department of Economic Development-Planning Division, Jan. 1969.

(3) Grubb, Herbert W. *The Texas Input/Output Model, 1972.* Austin: Texas Department of Water Resources, Planning and Development Division, Feb. 1978.

(4) ________The Structure of the Texas Economy, vol. 1. Austin: Office of the Governor, Office of Information Services, Mar. 1973.

(5) Herskovits, M. J. *Man and His Works.* New York: A. Knopff Co., 1947.

(6) Hoppe, Robert. *Building a Non-Metropolitan Input/Output Model: Minnesota's Region Six East,* Tech. Bull. 313. Minneapolis: University of Minnesota, Agricultural Experiment Station, 1978.

(7) Lamphear, F. Charles, and Theodore W. Roesler. *1970 Nebraska Input/Output Tables,* Economic and Business Report No. 10. Lincoln: University of Nebraska, Bureau of Business Research, 1970.

(8) McKean, John R., and S. Lee Gray. *An Economic Analysis of Water Use in Colorado's Economy.* Fort Collins: Colorado State University, Department of Economics, Dec. 1975.

(9) Miernyk, W. H. *The Elements of Input/Output Analysis.* New York: Random House, 1965.

(10) Nelson, Paul E., and John Perrin. *Economic Effects of the U.S. Food Stamp Program, Calendar Year 1972 and Fiscal Year 1974* AER-331. U.S. Dept. of Agr., Econ. Res. Serv., July 1976.

(11) ________"Economic Effects of the Food Stamp Program," *Agricultural Food Policy Review: Proceedings of Five Food Policy Seminars,* AFPR-2. U.S. Dept. of Agr., Econ. Stat. and Coop. Serv., Sept. 1978, pp. 89-94.

(12) Robinson, Lucinda A., and others. *The 1975 West Virginia Input/Output Study: Modeling A Regional Economy.* Morgantown: West Virginia University Foundation, 1979.

(13) Schaffer, William A., Eugene A. Laurent, and Ernest M. Sutter, Jr. *Using the Georgia Economic Model.* Atlanta: Georgia Institute of Technology, The College of Industrial Management, Nov. 1972.

(14) Tiebout, C. M. "Regional and Interregional Input/Output Models: An Appraisal," *The Southern Economics Journal,* XXIV, Oct. 1957, pp. 140-147.

(15) U.S. Department of Commerce, Bureau of the Census. *Census of Manufacturers, 1972, Area Statistics,* vol. III, pts. 1 and 2, 1976.

(16) U.S. Department of Agriculture. *Agricultural Statistics,* 1973.

(17) United States Water Resources Council. *Guideline 5: Regional Multipliers 1977.*

Appendix table 1--Standard Industrial Classification (SIC) of sectors for 10-sector economy 1/--Continued

Two-digit 1972 SIC codes, industry sectors	Section number	Texas	Section number	West Virginia	Section number	Washington	Section number	Georgia
Agriculture, forestry, & fisheries 01, 02, 07, 08, 09	1-17	0131,011-2,0115-6 0119,0113-4,0139, 0161,0171-5,0179, 0191,0271-2,0279, 0291,0212,0214, 0219,0211,0213, 0241,0729,0251-4, 0259,5191,0724,071 0721-3,0741-2,0751 -2,0761-2,0781-3, 0971,0811,0821, 0843,0849,0851, 0912-3,0919,0921.	1	01	1-5, 15-16	011,013,018, 019 (in part), 016-7,02,071 091,08.	1-4	013,011,012,019 07-9,
Mining 10, 11, 12, 13, 14	18-21	1311,1321,1381-2, 1389,1011,1021, 1031,1051,1061, 1081,1092,1094, 1099,1211,1213, 1411,1422-3,1429, 1442,1446,1452, 1453-5,1459,1472-7 1479,1481,1492, 1496,1499.	2-5	121,131-2, 1389	14	10-4	5-6	10-4
Construction 15, 16, 17	22-26	1521-2,1531 plus subcontrac.-2 dig. -17,1541-2 plus subc., 1611,1622-3, 1629, maint. & repr.	6-8	151,16-7.	48	15-7	7	15-7
Food manufacturing 20,21	27-35	2011,2013,2016-7, 2021-4,2026,2041, 2043-8,2051-2,2032-5, 2037-8,2091-2, 2061-3,2065-7,2074-7, 2079,2095,2097-9, 2121,2082,2084, 2086-7.	9-12	201,2099,202, 205,208.	6-11	201-3,2091-2, 204,205-7,2095, 2096-9.	8-13	201-9

See footnotes at end of table.

Continued--

Appendix table 1--Standard Industrial Classification (SIC) of sectors for 10-sector economy 1/--Continued

Two-digit 1972 SIC codes, industry sectors	Section number	Texas	Section number	West Virginia	Section number	Washington	Section number	Georgia
Nonfood manufacturing 21-39	36-113 173	2211,2221,2231, 2241,2251-4,2257-9, 2261-2,2269, 2271-2,2279,2281, 2283-4,2291-9, 2311,2321-3,2327-9, 2331,2335,2337-9, 2341-2,2351-2, 2361,2363,2369, 2371,2381,2384, 2386-7,2389,2391-7, 2399,2411,2421, 2426,2429,2431, 2434-6,2439,2441, 2448-9,2452,2491- 2,2499,2511-2, 2515.2517,2519, 2521,2531,2541, 2522,2542,2611, 2621,2631,2661, 2641-3,2645-9, 2651-5,2711,2721, 2731-2,2741,2751- 3,2795,2761,2771, 2782,2789,2791, 2793-4,2812-3, 2865,2861,2869, 2816,2819,2821, 2822,2823-4,2831, 2833-4,2873-5, 2879,2841-4,2851, 2891-3;2895,2899 2911 ,2951-2,2992, 2999,3011,3021, 3041,3069,3079, 3111,3142-4,3149, 3151,3161,3171-2, 3199,3211,3221, 3229,3231,3251, 3253,3255,3259, 3261,3262,3269, 3281,3291-3,3295 7.3299,3274-5, 2591	13-27	23,241-2,25, 27,281,286, 287,2891,2899 29,321-6,33-9	12-13, 17-42	22-3,242,2435- 6,2431,2434, 2439,244-5,249, 25,251,261-2, 263-6,27,281, 286-7,289,282- 5,29,321-9,331- 2,339,3331-3, 3339,334,3351, 3356-7,3362, 3369,3334,3353 -5,3361,344, 351-4,359,355- 8,36,372,376, 371,374-5,379, 373,30-1,38-9.	14-42	221-4,2261-2, 2269,228,227, 229,225,23-5, 261-5,27,281, 286-9,282-5,29 30-2,331-2,3391- 9,333-6,3392,34, 35,361-9,371-2, 3791,373-5,3799 38-9,19,21.

See footnotes at end of table.

Continued--

Appendix table 1--Standard Industrial Classification (SIC) of sectors for 10-sector economy 1/ --Continued

Two-digit 1972 SIC codes, industry sectors	Section number	Texas	Section number	West Virginia	Section number	Washington	Section number	Georgia
Nonfood manufacturing --continued 21-39	36-113 173	3241,3271-3,3312,3313,3315-7,3321-2,3324-5,3331-3,3339,3341,3334,3351,3353-4,3356-7,3361-2,3369,3398-9,3441,3443-4,3446,3448-9 3442,3411-2,3421,3423,3425,3429,3431-3,3451-2,3461-3,3465-6,3469,3471,3479,3494,3498,3493,3495-7,3499,3523-4,3531,3537,3534-6,3532-3,3511,3519,3541-2,3544-7,3549,3551-5,3559,3561-9,3585,3572-4,3576,3579,3581-2,3586,3589,3592,3599,3612-3,3621-4,3629,2641,3643,3651-2,3661-2,3671-9,3691,3693-4,3699,3721,3761,3724,3764,3728,3769,3711,3713-5,3731-2,3743,3751,3792,3799,2451,3811,3821,3823-4,3829.3825,3841-3,3832 3851,3861,3873,3942,3944,3949,3911,391-5,3931,3951-3,3955,3961-4,3991,3993,3995-6,3999,3482-4,3489,3761,3795.3613-6,3639						

See footnotes at end of table.

Continued--

Appendix table 1--Standard Industrial Classification (SIC) of sectors for 10-sector economy 1/--Continued

Two-digit 1972 SIC codes, industry sectors	Section number	Texas	Section number	West Virginia	Section number	Washington	Section number	Georgia
All Transportation 40-48	114-121	4011,4013,4041, 4131,4212-4,4222, 4224-6,4231,4411, 4421,4441,4452-4, 4459,4463-4,4469, 4511,4521,4582-3, 4612-3,4619,4111, 4119,4121,4141 4142,4151,4171-2, 4712-3,4742,4782-4,4789.	42-4	40-6	43	40-7	43	40-7
All utilities (including communications, gas, electric, water, sanitation) 49	122-127	4811,4821 ,2832-3, 4899,4922-5,4932, 4911,4931,4941, 4952-3,4959,4961,	45-48	48-9	44-47	491,493(in part), 492,494-7,48	44	48-9
Trade (wholesale & retail) 50-59	128-145	5012-4,5141-9, 4221,5152-3,5159 5154,5081-2,5084-8,5171-2,5021, 5023,5031,5039, 5041-3,5051-2, 5063-5,5072,5074, 5075,5078,5093-4, 5099,5111-3,5122 5133-4,5136-7,5139, 5194,5198-9,5211, 5083,5231,5251, 5311,5331,5399, 5961,5411,5422, 5423,5431,5441, 5451,5462-3,5499, 5511,5521,5531, 7531,7534-5,7538-9,7542,7549,5541, 5611,5621,5631, 5641,5651,5661, 5681,5699,5712-4, 5719,5722,5732-3,	28-32	50-9	49	50-9	45 50	50-9 unallocated industries

See footnotes at end of table.

Continued--

Appendix table 1--Standard Industrial Classification (SIC) of sectors for 10-sector economy 1/--Continued

Two-digit 1972 SIC codes, industry sectors	Section number	Texas	Section number	West Virginia	Section number	Washington	Section number	Georgia
Trade (wholesale & retail) --continued 50-59		5812-3,5261,5271, 5551,5561,5571, 5599,5912,5921, 5931,5941-9,5962 5963,5982-4,5992,- 4,5999. 5161,5181-2						
All services (including Finance, insurance, real estate, education, all government enterprises) 60-67 70, 72,73, 75, 76, 78, 79 80-84, 86, 88, 89, 91-97, 99	146-172 2/174	6011,6022-8,6032- 4,6042,6044,6052, 6054-6,6059,6112- 3,6122-5,6131, 142-6,6149,6153, 6159,6162-3,6311, 6321,6324,6331, 6351,6361,6371, 6399,6411,6211, 6221,6231,6281, 6512,6513-5,6517, 6519,6531,6541, 6552-3,6611,6711, 6722-5,6732-3, 6792-4,6799,8111, 7011,7021,7032, 7033,7041,7211-9, 7231,7241,7251, 7261,7271,7299, 7311,7312-3,7319. 7331-2,7339,7361, 7221,7333,7813-4, 7819,7823-4,7829, 7395,7391,8922, 7321,7341-2,7349, 7351,7362,7369, 7392-7,7399,7832-3, 7911,7922,7929, 7932-3,7941,7948, 7992-3,7996-7, 7999,7512-3,7519,	33-41	60,61-2,64-5 70,80-9,	50-51	70-89(exc. 071) 60-67	46-49	60-6,73,81,89, 70-2,75,80,82-6

See footnotes at end of table.

Continued--

Appendix table 1--Standard Industrial Classification (SIC) of sectors for 10-sector economy 1/--Continued

Two-digit 1972 SIC codes, industry sectors	Section number	Texas	Section number	West Virginia	Section number	Washington	Section number	Georgia
All services (including Finance, insurance, real estate, education, all government enterprises --continued		7523,7525,7622-3, 7629,7631,7641, 7692,7694,7699, 8011,8021,8031, 8041,8062-3,8069, 8071-2,8042,8049, 8081,8091,8211, 8221,8222,8231, 8241,8243-4,8249, 8299,8911,8931, 7372,7374,7379, 8999,8321,8331, 8351,8361,8399, 8411,8421,8611, 8621,8631,8641, 8651,8661,8699.						
Households 3/								

See footnotes at end of table.

Continued--

Appendix table 1--Standard Industrial Classification (SIC) of sectors for 10-sector economy 1/ --Continued

Two-digit 1972 SIC codes, industry sectors	Section number	Colorado	Section number	Nebraska	Section number	Kansas
Agriculture, forestry, & fisheries 01, 02, 07,08, 09	2-4	01,02	1-3	01,014,(in part)	1-12	011-4,019,07
Mining 10, 11, 12, 13, 14	6-10	1011,0121,1031 1041,1044,1061, 1094,1099,1211, 1081,1213,1381, 1382,1389,1481, 1311,1321,14 (exc. 148),324- 5,327.	4	10-4	13-16	1311,138,147 14,103,12,132.
Construction 15,16,17		none listed	43-46	16-7 maintenance & repair	17-20	15-7 maintenance & repair
Food manufacturing 20, 21	5	20	5-8	20,201,202,204	21-24	2011,2013,2015 2023-4,2026, 2041-2,2046,20, 205,207,208-9.
Nonfood manufacturing 21-39	12-13, 15-16, 18-23	2911,295,299, 33,514-5,2522 2542,2591,2599, 34-5,362-4,37, 3691-2,3694, 3699,3573-4, 361-7,3693,38, 22-3,31,26-8, 30,3482-3,24, 2511-2,2519, 2521,2531,2541, 21,323,326,328-9, 39.	9-20	22-3,26-7,287, 281-6,289,33-4, 352,36,351,353- 9,379,38,24-5, 29,30,32,371-5, 39,31,21.	25-47	231-3,236, 239,263-5, 271-9,281,287, 282-5,289,291, 295,299,301, 306-7,324,327, 323,325,328, 329,331-2,334, 336,339,3441-4, 3449,341-3,345-9 352,3531-5,3551 3555,361-7,369, 354,356-9,3711 3713-5,3721-2, 3729,3791,373-4 3799,22,24-5, 31,38,39.
All transportation	11	4612-3,4922-3	42	40,41-2,44-7	48-50	40-2, 44-7

See footnotes at end of table.

Continued--

Appendix table 1-Standard Industrial Classification (SIC) of sectors for 10-sector economy 1/--Continued

Two-digit 1972 SIC codes industry sectors	Section number	Colorado	Section number	Nebraska	Section number	Kansas
All utilities (including communications, gas, electric, water, sanitation) 49	17	40-2,45,47-9 (exc. 4922-4 & parts of 491 & 4931	41	48-9	51-52	481-3,489,491 4931,492,4932 494-5
Trade (wholesale & retail) 50-59	24	50-9	21-30	53-4,56,596 525,551-3,58, 521-4,554,559, 57,591-5,597-9 504-5,508,501-3,506-7,509.	53-60	504-5,508,50, 506-8,5252,554, 58,5251,53-7,59.
All services (including Finance, insurance, real estate, education, all government enterprises) 60-67; 70,72,73,75,76, 78,79,80-84,86,88,89,91-97, 99	1, 14, 25-27	4924,4931(part) 4911,70,72-3,75-6,78-81,84,85, 89,821,822.	31-40	70,72,80,82,07 (exc. 074),81 84,86,88,63-4.	61-69	60-7(exc.616), 70 (exc. 7031), 72,75,76,78-9, 736,73(3xc. 7391) 81,86,89,82.
Households 3/						

1/ The two-digit SIC's for 1967 and 1972 differ in some instances. Texas, West Virginia, Washington, and Colorado used codes from the 1972 SIC Manual, so the two-digit codes cited in column 1 are from the 1972 Manual. Georgia, Nebraska, and Kansas each used codes from the 1967 SIC manual.

2/ In the case of sales from franchises operating within hotels and lodges, these activities are disaggregated from services and into retail trade.

3/ There is no Standard Industrial Classification Code for households. The States derived their household sector from the final demand portion of their traditional transactions table. Households are listed here as a sector to complete the 10-sector model.

Sources: (1, 2, 3, 7, 8, 12, 13)

U.S. GOVERMENT PRINTING OFFICE 1980 -0- 310-945/222

UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C. 20250

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF
AGRICULTURE
AGR 101
THIRD CLASS

U.S.MAIL

Economics, Statistics, and Cooperatives Service

The Economics, Statistics, and Cooperatives Service (ESCS) collects data and carries out research projects related to food and nutrition, cooperatives, natural resources, and rural development. The Economics unit of ESCS researches and analyzes production and marketing of major commodities; foreign agriculture and trade; economic use, conservation, and development of natural resources; rural population, employment, and housing trends, and economic adjustment problems; and performance of the agricultural industry. The ESCS Statistics unit collects data on crops, livestock, prices, and labor, and publishes official USDA State and national estimates through the Crop Reporting Board. The ESCS Cooperatives unit provides research and technical and educational assistance to help farmer cooperatives operate efficiently. Through its information program, ESCS provides objective and timely economic and statistical information for farmers, government policymakers, consumers, agribusiness firms, cooperatives, rural residents, and other interested citizens.