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HOW TO MEASURE THE IMPACT OF
AN FPU PROGRAM

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INTRODUCTION

This report is intended to deal with two common methods for assessing economic impacts. These methods could, presumably, be used to assess impacts from new utilizations of forest products, although they are capable of use for a wide variety of purposes that are similar to new forest product utilizations as well.

Portions of this report were taken from discussions associated with other projects; in particular, a project dealing with the probable impact from a closing of Reserve Mining's plant in Silver Bay, Minnesota. Copies of these other reports are available upon request.

The two methods to be discussed are: Economic (Export) Base Analysis and Input-Output Analysis. The assumption is made that the reader is currently unfamiliar with these techniques so that the presentation will be very basic in its level.

ECONOMIC BASE ANALYSIS

The term economic base is used widely and is subject to a number of different interpretations. The term generally highlights the fact that no region is self-sufficient. Most of the regions of the world depend on one another for the many goods and services they consume as well as for the demand for at least a portion of the goods they produce. In other words, regions trade with one another in order to take advantage of the economies that result from specialization.

In general, the smaller the region, the less self-sufficient it is. This means that sub-national economies probably depend more on trade than does the nation as a whole, sub-state economies depend more on trade than does the state, and so on. This dependence on trade means that any region must be able to pay for its imports over the long run. One usual source of import financing comes from a region's exports.

Economic base analysis asserts that a region's prospects for growth and prosperity are dependent in a very real way on the strength of its exporting industries. These industries bring in outside monies which, in turn, enables the region to import the goods and services that it needs to function.

It follows that the industries engaging in export activities are termed as basic while the industries that import and/or service basic activities are regarded as non-basic. The prospects for the non-basic activities depend both directly and indirectly on the health of the basic activities. For example, every employee in the basic activity generates a certain number of additional employees in the non-basic industry. These second-level employees are there to produce goods and services that are used either as inputs to the basic industries' production or as consumer goods and services for the basic industries' employees.

There are a number of procedures that can be used to identify the basic industries in a region. The most direct of these involves asking local industry representatives, usually on a sample basis, the percentage of their business that is oriented toward exports. An export is defined as any activity that results in monies that are earned outside of the boundaries of the reference region being spent inside that region. It is the payment that matters, not the location of the transaction.

For example, in interviewing a restaurant, an export would exist any time a visitor from outside of the region bought a meal. Even though the transaction takes place inside of the region being studied, the fact that the money originated elsewhere constitutes an export by that amount.

Direct survey usually involves as much guesstimation as estimation on the part of cooperating firms. The amount of detail needed (some would say the

amount of accuracy required) dictates the amount of problems encountered in refining these guesstimates. At one extreme, the survey may involve sampling customers to determine their places of residence and work. However, store owners often have a pretty good idea of their sources of revenue. This makes such extensive work unnecessary in most cases.

A second approach is to estimate the proportion of a given industry's exports based on experience or "feel" for the community. While this might sound like guessing in the extreme, it is often true that an individual or group of individuals involved with the region's economy can come up with fairly accurate estimates for the more important industries in the area.

A third method uses information collected for other purposes to estimate the level of industrial exports from the region. This "secondary information" usually needs to be organized under some type of model, with attending assumptions about the character of both the industry and the region. The most common procedure for export-level estimation involves the use of the so-called location quotient. Discussion of this technique will be deferred to a later section in this chapter.

The reader might suspect by now that the most usual procedure is to combine techniques in some fashion. A survey is often used for the larger and more important industries in the region. Guesses by experts might be used for those industries that have obvious export or local service orientations. Secondary data techniques might be used for those industries where such information is readily available and reliable. Cost considerations, the need for accuracy, the time available for completing the analysis, and levels of cooperation from local business firms dictate the methods used.

DATA REQUIREMENTS

Another consideration in base analysis deals with the unit of data to be used. One example presented earlier talked about economic base in terms of employment. Two other measurements commonly used are those of sales and value added. A few comments on each possibility follows.

If sales are used as the unit of account, the researcher is trying to determine the output of local industries that are directly or indirectly oriented to exports. This is often of importance to the business community itself. One problem with using sales information is that sales are dollar measures. Therefore, they are subject to price level changes. During periods of price instability, the estimated relationships are likely to be valid only over short periods of time.

The same concern exists for the value added measurement alternative. Value added is the extra value that is attached to a good or service at successive stages of production. For example, if the value of wheat at the farm is \$0.10, an elevator might add an additional \$0.03 for the service of storing the wheat, the railroads might add another \$0.02 for transportation, a miller might add another \$0.13 for his/her contribution to production, a baker another \$0.10, and the retail store another \$0.10 for its collection and sales services. These additions to the value of a loaf of bread are the wages, interest, rents, and profits paid to factors of production at each successive stage of production. They represent the value that each production stage contributes to the price of the final loaf of bread.

Value added can be a very important measure for economic planning. It avoids the double counting that is possible with sales estimates (counting both the value of the loaf of bread and the value of the services of a local miller), and it provides a good indication of payments to local resources of production.

This measure is subject to inflation, as noted above, as well as to changes in the location of the unit adding value to the final output. This latter problem is especially troublesome when there are many local and external sources of supply for a given intermediate input (goods that are bought and sold for the purpose of production rather than consumption). Value added is also one of the more difficult measurements to collect.

By far, the most common unit of measurement used for economic base analysis is employment. Employment levels are not subject to inflation-related measurement problems, employment figures are generally available, and employment figures are the least sensitive of the alternatives in terms of disclosure. Employment figures are reported at reasonable levels of detail by many government sources, such as the Census of Population (employment by place of residence) and the Census of Business (employment by place of work).

The primary difficulty with using employment is that it is hard to judge when changes are taking place due to changes in export levels, as the economic base model assumes, or due to changes in technology, such as the substitution of machinery for labor in the production process. Also, employment provides little insight into what is often the reason for an economic base study in the first place--the attempt to look at the monetary importance of certain key industries to the region being studied.

Employment data, taken from secondary sources, were used in the Reserve Mining Study. The time element made this approach the most feasible. Secondary data were used because such information could be easily acquired. Employment was used because of its availability in reasonable amounts of detail from these secondary data sources. The reader should be aware of the aforementioned strengths and weaknesses of taking this approach when interpreting the results.

The next section will describe the location quotient method and its assumptions. This will be followed by a summary of the results from applying the location quotient methodology to the Reserve Mining Case. Following that will be a presentation of more general techniques for analyzing the trends in the economy apart from the Reserve Case and the questions that it raised. The model chosen for this task is most commonly called "shift-share analysis" which, like the location quotient, utilizes secondary data--usually employment. The final section of this chapter will summarize and conclude the analysis.

THE LOCATION QUOTIENT

The primary use of location quotients is to identify a region's exporting industries. The results depend on one primary assumption: "The regional industries are representative of their national counterparts." It follows from this that the percentage of regional employment in any given industry to total regional employment will be equal to the percentage of employment in that industry nationally to the total national employment when the region is self-sufficient in that industry's output. For example, if 12 percent of the total national labor force is employed by retail trade establishments, one would expect 12 percent of the labor force in a self-sufficient region to be employed in retail trade as well.

To compute location quotients, total regional employment in each industry is divided by total regional employment. This gives the local percentage of employment in each industry, or the local coefficient. The same computation is made for each industry at the national level, giving national coefficients. These two percentages are then compared on an industry-by-industry basis. That is, the local coefficient for each industry is divided by the national coefficient for that same industry. The resulting number is a location quotient.

Mathematically, the location quotient is: $\frac{R_i/R}{N_i/N}$

where: R_i is the regional employment in industry i

R is the total regional employment

N_i is the national employment in industry i

N is the total national employment.

A hypothetical example will illustrate the method. Assume the following figures: the national labor force is 1,200,000; the retail trade industry employs 80,000 people nationwide; Region X, within the nation, has a total employment of 100,000; and retail trade in Region X employs 7,500 people. Performing the necessary calculations, the regional coefficient is 7,500/100,000 or 7.5 percent. The national coefficient is 80,000/1,200,000 or 6.7 percent. The location quotient in this instance would be 7.5/6.7 or 1.12.

A location quotient greater than one indicates an industry that produces more than is needed locally. The excess is for export. Conversely, a location quotient less than one indicates a good or service that is imported into the region. This interpretation arises from the assumptions of the model. Since quotients greater than one occur when the percentage of regional employment in a given industry is greater than the percentage of national employment in that industry, implying that the industry is producing more product than it can use, it follows that it must be exporting the surplus. The reverse argument can be made for the importing sectors. These industries are producing less regionally than their national counterparts. The deficiency is assumed to be imported from outside the region.

The next step is to compute an economic base multiplier for the region by utilizing the total and "excess" employment estimates for the region. This multiplier is calculated by first computing the total excess employment for the

region. This is the employment in excess of what would be in the region if the location quotient were equal to one. The total regional employment (basic plus non-basic employment) is then divided by that figure.

The resulting multiplier can be used to forecast the future growth or decline of a region. That is, the impact of changes in basic industry employment on the total employment of the region can be estimated. This multiplier follows from the assumption that exporting industries are the growth and income generating sector of the regional economy.

For example, if the total regional employment in all industries is equal to 100,000 and the total of excess employment for all of the basic industries is 50,000, the multiplier is calculated to be $100,000/50,000 = 2$. This is interpreted as saying: For every job in the basic (exporting) industries for the region, one additional employee is required in non-basic (local servicing) industries, for a total of two employees. Note that the multiplier includes the basic employee. Now, if there is an increase of 200 employees in the basic industries due to the expansion of an existing plant, the model would predict that the region's employment would grow by an additional 200 non-basic employees.

At this point it should be noted that the economic base multiplier is a short-run concept. Many of the variables assumed constant in this model are subject to change over time. There may be other effects on the income of a region in addition to export levels. One such effect comes from technological changes in the region's production methods.

Finally, it is necessary to have data that can be manipulated to fit the particular industry sectors that are chosen. Much of the census data is broken down by two digit SIC's (Standard Industrial Classification). Therefore, it is usually no problem to fit employment data to the relevant industrial sectors of

the region. The data used for the purposes at hand are broken down for the eight counties by two digit SIC's. Thus, the data are reasonably detailed and provide the possibility for subsequent aggregation should such aggregation be necessary. The most important data requirement is that the same amount of industrial detail be available on a national level to allow for comparison.

The location quotient approach will be demonstrated through an example for Northeast Minnesota. The derived multiplier will be estimated and applied to the identified regions.

A SAMPLE ANALYSIS

Refer to Table 1. There were 125,817 employees in the eight counties of Northeastern Minnesota and Northwestern Wisconsin as of the 1970 Census of Population. These 125,817 employees were subdivided into thirty-six industrial groups in accordance with the divisions made for census purposes.

The largest employing county was St. Louis, with 75,930 employees. Cook County was the smallest, with 1,296 employees. The largest industry in the eight counties was Mining, with 12,345 employees. This was followed closely by Education, with 11,893 employees.

The location quotients in Table 1 were computed from the employment data for the combined eight counties as well as for the nation as a whole. The combined county coefficients represent the percentage of total employment in each industrial grouping. As is consistent with the rankings for total employment, Mining employs the largest percentage with 9.8 percent followed by Education with 9.4 percent. The corresponding percentages for the nation as a whole are 0.8 percent in Mining and 8.0 percent for Education.

Finally, the location quotients are derived by dividing the local coefficient by its national counterpart. It can be seen that employment in Mining

is quite high in the eight counties as compared to what would be expected if the local industry just matched the national average. When the local coefficient is divided by the national, a quotient of 11.92 is derived. Since this is significantly greater than one, the conclusion is that most of the local Mining employment is utilized for export purposes.

It is further seen that the proportion of total employment in Education is also greater than the national industry average would lead one to expect. The quotient is again greater than one (1.18), leading to the conclusion that the 11,893 employees in Education serve more than just the eight county region.

Just by the way of example, the Finance, Insurance, and Real Estate sector (F.I.R.E.) accounts for a lesser percentage of total local employment than its national counterpart. The conclusion is, therefore, that the F.I.R.E. industry is not basic to the region and that it must be considered to play a service role to local exporting firms. In fact, the indication is that at least a portion of the services of F.I.R.E. must be imported into the region in order to bring the local economy up to the national average.

Table 2 summarizes the results of Table 1 by dividing the industries into their basic and non-basic components. The basic industries employed 69,597 persons (55.3% of the total), while the non-basic industries employed 56,220 persons (44.7% of the total).

Table 3 presents the estimated excess employment along with the computed value of the employment multiplier (5.178). This multiplier was computed by dividing the excess employment into the total regional employment, or in other words, by determining the number of non-exporting employees that exist for every exporting employee. In essence, the value 5.187 tells that for every exporting employee in the region, 4.187 employees are needed to provide local goods and services, coming to the total of slightly more than five.

TABLE 1

EMPLOYMENT SUMMARY FOR SEVEN NORTHEAST, MINNESOTA AND ONE
NORTHWEST WISCONSIN COUNTIES: LOCAL INDUSTRIAL COEFFICIENTS;
AND COMPUTED LOCATION QUOTIENTS, 1970.

1970 Regional Multiplier = 5.178.

Industry	County Employment								County Total	National Employment	County Coeffi- cient	National Coeffi- cient	Location Quotient
	St. Louis	Lake	Carlton	Douglas	Atkin	Cook	Itasca	Koochiching					
Agriculture, forest, fish hunting	854	60	451	205	674	60	415	131	2,945	2,040,400	.02361	.03710	.631
Construction	8,945	1,355	43	111	71	84	1,715	19	12,345	630,700	.09012	.00023	11.727
Furniture, lumber & wood products	4,247	191	405	051	196	177	630	215	6,950	4,572,235	.05524	.05772	.925
Primary metals	764	140	224	230	201	60	400	425	2,462	970,391	.01957	.01770	1.501
Fabricated metal products	2,070	04	239	330	10	0	6	0	2,703	1,211,051	.02212	.01503	1.497
Machinery except electric	967	21	100	111	79	0	16	4	1,248	1,461,400	.00992	.01911	.519
Electrical mach., equip., & supplies	095	0	25	203	29	4	34	0	1,197	1,971,042	.00752	.02600	.366
Other durable & non-durable	202	13	3	50	3	0	0	0	363	1,904,925	.00709	.02406	.316
Food and kindred products	1,343	20	2,747	700	134	73	922	1,052	7,757	6,533,601	.06465	.00534	.727
Textile mills & fabric textiles	1,344	10	93	315	52	0	24	5	2,051	1,390,339	.01630	.01016	.070
Printing, publishing & allied	1,362	0	27	60	16	0	4	0	1,477	2,104,145	.01174	.02853	.411
Chemical & allied	1,114	33	71	242	34	0	107	10	1,611	1,191,624	.01200	.01556	.073
Railroad & railway equipment	207	0	17	10	5	0	7	0	326	907,720	.00759	.01290	.201
Trucking & warehousing	2,177	299	112	1,302	30	0	110	114	4,144	636,572	.03294	.00031	3.964
Other transportation	615	14	136	190	34	17	77	34	1,117	1,002,530	.00800	.01414	.620
Communications	1,000	30	03	712	10	25	116	49	2,113	1,109,207	.01679	.01459	1.159
Electric & sanitary services	951	47	103	172	24	13	60	51	1,429	1,073,663	.01136	.01602	.010
Hotels & lodging	1,714	67	129	316	43	37	159	30	2,515	1,204,049	.01999	.01677	1.192
Food, bakery, & dairy stores	3,046	101	246	593	34	0	190	70	4,294	3,133,302	.03417	.04091	.014
Eating & drinking stores	1,944	97	209	406	79	56	365	156	3,414	1,912,562	.02761	.02470	1.107
General merchandise, retail	2,750	135	211	050	110	75	453	104	4,704	2,299,300	.01007	.01003	1.266
Motor vehicle equip. & service stations	1,949	50	150	363	57	29	122	62	2,702	2,006,619	.02211	.02225	.011
Other retail	1,060	160	277	460	96	42	310	143	3,364	1,670,694	.02674	.02210	1.206
Banking & credit	4,700	164	410	741	234	64	562	293	7,360	4,242,223	.05697	.05541	1.070
Finance, insurance, & real estate	1,027	50	96	163	37	6	122	65	1,570	1,273,433	.01260	.01609	.739
Business services	1,602	33	114	207	33	9	129	72	2,219	2,344,954	.01763	.03324	.500
Repair services	616	14	51	02	19	0	35	5	010	1,294,099	.00650	.01691	.300
Other personal services	969	17	42	215	100	0	173	05	1,609	1,099,900	.01279	.01436	.091
Entertainment	2,425	103	193	426	112	135	203	264	3,943	2,410,560	.03134	.03140	.994
Hospital & medical	330	7	35	71	23	5	60	35	776	631,193	.00617	.00024	1.249
Education	6,305	236	061	1,470	109	94	592	311	10,066	4,246,107	.00001	.05546	1.243
Non-profit, religion	7,021	335	727	1,391	316	105	1,241	537	11,093	6,147,000	.09433	.00010	1.177
Professional	1,690	31	120	271	50	36	200	72	2,406	1,163,415	.01976	.01519	1.301
Government	1,390	57	110	230	52	10	140	65	2,006	1,953,002	.01650	.02552	.650
Households	3,031	246	260	004	132	130	419	237	6,059	4,201,652	.04016	.05400	.070
	1,020	39	115	140	57	18	161	41	1,591	1,126,016	.01265	.01470	.061
TOTAL	<u>75,930</u>	<u>4,323</u>	<u>9,397</u>	<u>15,421</u>	<u>3,375</u>	<u>1,296</u>	<u>10,399</u>	<u>5,676</u>	<u>123,017</u>	<u>76,553,599</u>			

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BASIC SERVICE INDUSTRIES FOR THE REGION - 1970
Multiplier = 5.178

Basic Industries	Employment	Location Quotient	Percent of The Region Total Employment
Mining	12,345	11.922	.09812
Railroad and railway express	4,144	3.964	.03294
Furniture, lumber & wood products	2,462	1.531	.01957
Hospital and medical	10,066	1.443	.08001
Primary metal products	2,783	1.397	.02212
Nonprofits and religion	2,486	1.301	.01976
Eating and drinking stores	4,784	1.266	.03802
Motor vehicle retail & service stations	3,364	1.206	.02674
Utilities and sanitary service	2,515	1.192	.01999
Education	11,893	1.177	.09453
Other transportation	2,113	1.159	.01679
Food, dairy and bakery products	3,474	1.105	.02761
Other retail	7,168	1.028	.05697
Total.	<u>69,597</u>		<u>.55317</u>

Service Industries

Elec, machinery, equipment & supply	363	.116	.00239
Chemical and allied	326	.201	.00259
Machinery except electric	1,198	.366	.00952
Business services	818	.384	.00650
Textile mills and fab. textile	1,477	.411	.01174
Fabricated metal products	1,248	.519	.00992
Finance, insurance and real estate	2,219	.530	.01763
Trucking and warehousing	1,117	.628	.00888
Agriculture, forest, fish	2,946	.631	.02341
Professional	2,086	.650	.01558
Other durables - non-durables	7,757	.722	.06165
Banking and credit	1,570	.739	.01248
Entertainment	776	.749	.00617
Communications	1,429	.810	.01136
General merchandise, retail	2,782	.811	.02211
Printing, publishing & allied	1,611	.823	.01220
Wholesale	4,294	.834	.03413
Households	1,591	.861	.01255
Government	6,059	.878	.04816
Repair services	1,609	.891	.01279
Food and kindred products	2,051	.898	.01530
Construction	6,950	.925	.05524
Other personal service	3,943	.996	.03134
Total.	<u>56,220</u>		<u>.44676</u>

TABLE 3

EXCESS EMPLOYMENT BASED ON EIGHT COUNTY DATA
AND LOCATION QUOTIENT ANALYSIS

Industry	Total Employment	Excess Employment
Mining	12,345	11,313
Railroad and railway express	4,144	3,100
Furniture, lumber and wood products	2,462	851
Hospital and medical	10,066	3,077
Primary metal products	2,783	795
Nonprofit and religion	2,486	574
Eating and drinking stores	4,784	1,009
Motor vehicle retail & service st.	3,364	571
Utilities and sanitary services	2,515	401
Education	11,893	1,790
Other transportation	2,113	289
Food, dairy and bakery products	3,474	329
Other retail	<u>7,168</u>	<u>198</u>
Total	<u>69,597</u>	<u>24,297</u>

Employment Multiplier = Total Employment / Excess Employment =

125,817 / 24,297 = 5.178

INPUT-OUTPUT MODELS

The input-output model was originally developed in the 1940's by Wassily Leontief. In theory, the model attempts to make operational the concept of general equilibrium. General equilibrium recognizes that every economic unit in an economy relates, directly or indirectly, with every other unit. When the demand for corn increases, for example, the price of corn is expected to rise, while everything else is held constant. Everything is not constant for very long, however. The rising price of corn entices entrepreneurs to put additional resources into the production of that commodity. Farmers respond to higher corn prices by bidding resources out of non-corn related production. This means that the price of resources in corn production will increase relative to other production options. It also means a shift of resources out of alternate production options in favor of corn-growing activities.

The demand for corn might have increased for any number of reasons. There might have been an increase in the price of wheat, causing consumers to switch to corn because of its relatively low cost. Or, there might have been an increase in tastes related to corn consumption. Or, new customers might have entered the market for corn, as was the case when the Soviet Union began to purchase grains from the United States.

Whatever the reason, relative prices of corn and other commodities change, relative productions change (as the resources are taken out of other forms of production and put into corn), and relative prices of resources change, all as a result of the initial change in demand. In fact, if there are unemployed resources, or if new resources are put into the market because of higher resource returns, there is even a change in the general level of resource use associated with this change in demand.

In short, virtually every sector of the economy is changed, at least somewhat, due to this initial change in demand for one commodity. These changes continue to occur until the total adjustment to the initial change has had time to play itself out and the economy settles down into a new "equilibrium" position. General equilibrium would simultaneously solve for all of these changes and would simultaneously estimate new variable values associated with the shifting demands and supplies for all goods, services, and resources.

Although the general equilibrium model is conceptually complete, it has the deficiency of being non-operational for empirical analysis. No computer yet exists with the memory capacity to simultaneously solve for all prices and quantities in an economy. Even if there were a computer large enough for such a task, the data requirements of such a model would be out of reach. However, the alternative of looking at a change in one industry or resource market at a time, assuming all other markets to be constant and unaffected, creates an extremely unrealistic estimate from another direction.

Input-output attempts to move toward general equilibrium while staying within the data and computational capabilities of most research projects. Certain assumptions have to be made in order to make general equilibrium more operational:

(1) Prices are assumed to be constant. This means that the model no longer solves for this variable, but, rather, makes price a parameter to the equation system, thereby eliminating the solution requirements for one-set variables.

(2) Individual firms are assumed to be capable of being meaningfully aggregated into industrial sectors. This eliminates the requirement of solving for output levels of every firm in the economy and reduces the number of production equations to a manageable size.

(3) The production function for the region is assumed to be linear and homogeneous. This simply means that the production input pattern is constant for all levels of regional output. A doubling of output requires that all inputs also be doubled, a tripling of output requires that all inputs be tripled, and so on.

(4) Production coefficients, per dollar of output, are assumed to be constant. This means that if industrial sector A requires 10% of input from sector B, in order to produce \$1 worth of sector A's output, it will require 10% per dollar no matter how many total dollars of A's output are produced.

(5) Intermediate production requirements by local industries from other local industries are assumed constant. This means there is no substitution through changing trade patterns between regions.

These assumptions have the effect of greatly reducing the number of computations necessary for the implementation of a full-scale general equilibrium model. Now, instead of having a separate equation for every firm in the market, there are only as many equations as there are identified aggregate industrial sectors. Instead of a separate equation for every resource market, the resources are lumped into an exogenous final payments sector.

The model is triggered by changes in final demand; that is, demand for goods or services related to final uses. The components of final demand are exogenous to the model's structural characteristics in much the same way as final payments are, but the role of final demand as an initiator of impacts gives it a very unique role in the input-output scheme.

The basic input-output model consists of a series of three separate tables. The first is called the transactions table. The transactions table lists all industrial sectors defined for the purposes of the analysis being conducted. It should be noted that these sectors have to be defined so as to account for every

firm in the region. The individual sectors should be relatively homogeneous in terms of their input requirements and output distributions. They should generally be disaggregated enough to highlight the true structure of the region without being so disaggregated as to cause significant problems in data collection or in disclosure of the operations of any one firm in the region.

The transactions table also contains values for final demand, as discussed briefly earlier, as well as the values for final payments. The grand totals of such a table contain the gross outputs for each industrial sector and the gross inputs required to produce those outputs.

Table 4 represents the structure of a hypothetical input-output table with three industrial sectors: Extractive, Manufacturing, and Services. Remember, the sectors should be defined so as to account for every firm in the region. The sectors should also, ideally, be as disaggregated as possible. For these reasons, Table 4 represents a very unrealistic example of an actual table. Keeping the size of the model to just three industries, however, makes required computations much simpler. The structure and use of larger tables remains much the same.

TABLE 4
DOLLAR VALUE OF TRANSACTIONS FOR A HYPOTHETICAL REGIONAL ECONOMY

<u>Industrial Sector</u>	<u>Extractive</u>	<u>Manufacturing</u>	<u>Services</u>	<u>Final Demand</u>	<u>Gross Output</u>
Extractive	100	700	000	4,625	5,425
Manufacturing	50	200	50	6,400	6,700
Services	75	300	75	4,905	5,355
Value Added	5,000	5,500	230	18,000	23,730
Imports	200	000	5,000	000	5,200
Total Inputs	5,425	6,700	5,355	33,930	

One of the most important things to remember when reading an input-output table is that the rows of the table represent sales and the columns of the table represent purchases. Thus, the 700 that appears in the Extractive row and the Manufacturing column indicates that firms in the Extractive industry sold \$700 worth of goods and services to firms in the Manufacturing sector. Looked at the other way, we could say that the 700 also represents a \$700 purchase by the firms in the Manufacturing sector from firms in the Extractive sector. The 50 in the Manufacturing row and the Services column represents a \$50 transaction between Manufacturing (the seller) and Services (the buyer), and so on.

The same industrial sectors are identified on the left hand margin of the table as appear along the top of the table. The sales and purchases between these sectors represent sales and purchases of "intermediate" goods and services. These are goods and services produced for the purpose of facilitating further production. Semi-finished goods would be an obvious example of intermediate production, but so would the services of lawyers, bankers, transportation agencies (in all cases not involving a final transportation use), and any other sectoral input or output oriented towards helping other industries with their own production.

The Value Added row of the table represents another form of sale--the sale of resources of production to each sector. In a theoretical sense, the resources of production include land, labor, capital, and enterprise. In a more practical sense, this row generally includes the income received by local households for whatever contribution they make to the production process. These resource inputs are not generally considered to be intermediate even though the sale takes place so further production can take place. Rather, they represent final inputs that add to the income of households as opposed to industrial sectors.

Imports represent sales to local industries by industries and resource holders outside of the locality's defined boundaries. Imports (and exports, too, for that matter) are defined in terms of payments. Thus, any time a local industry buys something that results in a payment going outside of the locality, the purchase constitutes an import into the reference economy.

Finally, final demand consists of sales for final uses. The usual categories making up final demand include Household Consumption (by households located in the region), Government Purchases of Goods and Services, Gross Private Domestic Investment (including inventory changes), and Exports (again, defined in terms of the payment made).

The gross output and total input values are equal. This is due to the fact that the transactions table really represents a type of cost accounting sheet for a regional economy--debits equal credits. The elements in the table that forces this balance (which is a balance by definition) are profits or losses. This is because the final value of output is made up of all the costs that go into production, with profits and losses making up the difference.

In summary, the transactions table has three identifiable parts: the intermediate transactions component, representing sales and purchases between firms; the final payments plus imports component, representing resource inputs into the firm's production plus inputs from outside of the region; and the final demand, representing the sale of goods and services for final use. The table balances between inputs and outputs, with profit as the balancing mechanism.

The transactions table contains a great deal of useful information in its own right. The regional balance of trade (exports - imports) can be discerned from this table as can gross regional product (the dollar value of all final goods and services produced within the economy minus imports). The level of interaction between local industries and between industries in the region and

households can be seen in this table. Finally, the relation between local household income and production is depicted in the transactions matrix.

The principal use for this table is found in the construction of the other two tables of the input-output system, however. As mentioned, the transactions table alone represents a cost accounting sheet for the region, nothing more or less. It is descriptive rather than analytical, and it does not allow for general equilibrium analysis of the type previously described without further modification. The next step uses the transactions table to construct a table of direct requirements, often called the technical coefficients matrix.

The question answered by the technical coefficients table is as follows: "If each local industrial sector sells to other local industrial sectors some total amount in intermediate goods and services so that the purchasing sectors can produce their own output, how much do the purchasing sectors require from the other local sectors per dollar of output?" For example, Manufacturing purchased \$300 worth of intermediate output from the Services sector in order to facilitate its own production of \$6,700 worth of intermediate and final outputs. How much did Manufacturing buy from Services per dollar of gross output? The answer is $300/6,700 = \$.045$. The same computation can be made for each intermediate sale and purchase in the transactions table. The result of these divisions is shown in Table 5.

TABLE 5

DIRECT DOLLAR REQUIREMENTS FOR A HYPOTHETICAL REGIONAL ECONOMY

<u>Industrial Sector</u>	<u>Extractive</u>	<u>Manufacturing</u>	<u>Services</u>
Extractive	.018	.104	.000
Manufacturing	.009	.030	.009
Services	.014	.045	.014

The rows are still read as sales and the columns as purchases. Only now the sales are in terms of cents per dollar, and the purchases have the special interpretation of "input requirements" per dollar of output. We call these "input requirements" because they represent requirements during the period of analysis in order for each sector to produce their own outputs, scaled down to a "dollar of output" basis.

The technical coefficients matrix represents a recipe for production. In order to produce one dollar's worth of output, the Extractive industry needed a pinch (1.8¢) of its own intermediate output, a dash (.9¢) of the intermediate output of the Manufacturing sector, and a smidgen (1.4¢) of the intermediate products of the Services industry. In order for Manufacturing to produce a dollar's worth of output, it required a pinch (10.4¢) from the Extractive firms, a dash (3¢) from Manufacturing, and a smidgen (4.5¢) from Services. And so it goes through all of the identified industries for the region.

One of the key assumptions of input-output analysis, mentioned earlier, is that this recipe does not change, regardless of the level of output. Thus, if the extractive industry were to experience an increase in final sales equal to \$10,000, it would require another \$180 worth of intermediate products from its own firms, \$90 from Manufacturing, and \$140 from Services. It should be emphasized that this process starts with a change in the final sales of an industry, or from "exogenous" forces. The coefficients in the interindustry section of the table represent the "endogenous" component of the table.

It can be seen that this first computed table gives the analyst limited ability for impact analysis. He or she could go through the process of assuming any number of changes in the final sales of the identified industries, multiply these assumed changes times the direct requirements coefficients, and come up with estimates as to the direct effects from these changing final sales on each

identified industry in the region. Just to make sure that there is understanding of this process, the question might be asked: "What is the direct effect on each regional industry from an increase in the exports from the Manufacturing sector equal to \$10,000,000?". The answer is that Manufacturing would increase by \$10,000,000 plus a direct intermediate production effect of \$300,000, for a total of \$10,300,000; the Extractive industry would find its intermediate production increasing by \$1,400,000; and the Services industry would see its intermediate production increase by \$450,000.

But this is not the end of the story. If each industry has to increase its output in order to service the increase in final sales of the Manufacturing industry, then each must, in turn, increase their intermediate purchases and sales from and to one another to service this second-round expansion in activity. The second round must then be serviced by a third round of outputs. Each round is smaller than the last due to leakages to imports and to local value added, until the process has completely played itself out. The first three rounds of such an increase will be shown below.

Table 6 shows the first round of increase in intermediate and final production from an increase in the final sales of Manufacturing of \$10,000,000.

TABLE 6
ROUND ONE FROM AN INCREASE IN MANUFACTURING FINAL SALES EQUAL TO
\$10,000,000

	Final Sales Change	Intermediate Sales Change
Manufacturing	\$10,000,000	\$ 300,000
Extractive	---	1,040,000
Services	---	450,000
Total	\$10,000,000	\$2,150,000

Note that the only exogenous change is the initial change in final demand assumed for the Manufacturing industry. The rest of the sales represent the direct first round results from those sales on the intermediate output of all industries in the region including Manufacturing. These are recipe requirements in order for Manufacturing to produce the hypothesized increased final sales.

Table 7 presents second round totals. Note that Manufacturing requires still more intermediate inputs from its own firms, this time to service the additional \$300,000 of output it had to produce to directly allow for the initial \$10,000,000 increase in final sales. Similarly, the Services industry needs to buy from each of the other industries to enable it to produce the additional \$450,000 directly required by Manufacturing. Finally, the Extractive industry must have additional inputs to produce its additional \$1,040,000 for Manufacturing. The rounds of production in Table 7 are indirect impacts.

TABLE 7

ROUND TWO FROM AN INCREASE IN MANUFACTURING FINAL SALES EQUAL TO
\$10,000,000

	<u>Manufacturing</u>	<u>Extractive</u>	<u>Services</u>	<u>Total</u>
Extractive	\$31,200	\$18,720	\$ 000	\$49,920
Manufacturing	9,000	9,360	4,050	22,410
Services	4,200	14,560	6,300	25,060

Now, Manufacturing has increased its sales three times: the \$10,000,000 that was initially assumed, the \$300,000 needed to directly service that increase in final sales, and the \$22,410 to service the \$300,000 in the first round. The Extractive industry has increased its sales by \$1,040,000 to service the final

sales change for Manufacturing plus the \$49,920 to service that first round increase, for a total of \$1,089,920 to this point. And so it goes.

We will now run through one more round of increased production, this time to service the second round. Table 8 presents this third round.

TABLE 8
ROUND THREE FROM AN INCREASE IN MANUFACTURING FINAL SALES EQUAL TO
\$10,000,000

	<u>Manufacturing</u>	<u>Extractive</u>	<u>Services</u>	<u>Total</u>
Extractive	\$ 2,331	\$ 899	\$ 000	\$3,230
Manufacturing	672	449	225	1,346
Services	1,008	699	351	2,058

Each additional round is computed in the manner shown above, and the totals are added to determine the total direct and indirect effects from the initial assumed change in the final sales of one of the regional industries. This process is obviously cumbersome. It would even be more difficult, impossible probably, to work such an iterative scheme for a larger number of industries or for higher direct coefficient values. Fortunately, the system of simultaneous equations represented by an input-output system can be solved using high speed computers in a matter of seconds, even for the largest of tables. The solution for the system in this example appears as Table 9.

The diagonal of the table shows "ones" plus some other factor. These "ones" represent the dollar increase to final sales of the industry for which such an exogenous change is assumed. The numbers appearing after the decimal represent

the direct (shown in Table 5) plus indirect effects from each assumed change in final sales. Thus, the \$10,000,000 change for the example using Manufacturing turns into a \$10,320,000 total increase in Manufacturing sales: \$10,000,000 to final sales, \$300,000 in direct sales, and \$20,000 in indirect sales. That \$10,000,000 in Manufacturing sales turns into an increase of \$1,090,000 in sales by the Extractive industry: \$1,040,000 of that directly and \$50,000 indirectly. Finally, the \$10,000,000 assumed increase in Manufacturing leads to an increase of \$490,000 in the sales of Services: \$450,000 of that direct and \$40,000 of that indirect.

TABLE 9

DIRECT AND INDIRECT DOLLAR REQUIREMENTS FOR A HYPOTHETICAL
REGIONAL ECONOMY

	<u>Extractive</u>	<u>Manufacturing</u>	<u>Services</u>
Extractive	1.019	.109	.001
Manufacturing	.010	1.032	.010
Services	.015	.049	1.015
Total	1.044	1.190	1.026

The total impact on all of the industries in the region combined is \$11,900,000 ($1.190 \times 10,000,000$). The 1.190 is called the demand multiplier for Manufacturing, or the total direct and indirect purchases this sector must make from itself and from the other regional industries in order to produce one dollar's final output. To conduct an impact study, simply take an assumed change in final demand for any of the industries times the demand multiplier for that same industry. This indicates the direct and indirect effects on the region

resulting from the assumed change. The impacts stem from the fact that industries in a region interact with one another through their purchases and sales from and to one another. The greater this level of interaction, the greater the industrial demand multiplier.

THE TWO-REGIONAL MODEL

Many extensions of the basic input-output model are possible, each providing more detailed analysis than the Direct and Indirect table taken alone. One of these extensions is to take interregional trade impacts into account in the endogenous portion of the table rather than as an exogenous factor, as trade was taken to be in the previous examples. A discussion of this interregional table is presented here since this extension will be made in the construction of the input-output model for the region being investigated.

Input-output analysis has many strengths in terms of its ability to predict impacts of changes in the final demand component of a regional economy. Its success as a predictive tool is weakened somewhat by the restrictive assumptions necessary for the table's construction. Three important limitations are continually mentioned in this regard: (1) all production relationships are assumed to be linear in form, (2) the element of time is completely ignored, and (3) the "feedback" effects resulting from interregional trade are not taken into account.

Experts in the field are currently working on the changes required to answer some of these criticisms. Much of this work has been directed toward the third limitation--omission of interregional feedback effects.

The essence of the work dealing with interregional feedback is this: The single-region models so prevalent in the United States today do an excellent job of tracing through internally transmitted impacts. In other words, single-region models treat local economies as being free of effects from trade patterns

resulting from locally induced production. Trade with other regions is treated as an exogenous component of the model.

Assume, for example, that there are two defined regions, each with its own internal industrial structure and each carrying on trade with the other. Region A has an input-output table with exports as an exogenous component of final demand and imports as an exogenous component of final payments. Region B has the same. Now assume that Region B increases its demand for the products of Region A. This represents an increase in the final demand for a certain set of Region A's industrial outputs.

Region A, with its single-region input-output model, will provide a strong capability for tracing through the rounds of internal changes required to satisfy B's increased demand. This is certainly useful information for the planners of Region A, but it falls short of a full analysis for the two regions taken together.

In order for Region A to increase production, its industries will need to buy more from one another as well as increase their intermediate imports from other regions, including Region B. What is more, local households in Region A will find their incomes increasing as a result of increased industrial activity, and they, too, will buy more products locally and from other regions. In turn, Region B should find that its exports to Region A are increasing as a secondary impact of its original changing demands for A's output. The increased activity in Region B will then indirectly affect the level of Region A's output, and so on, until the trade multiplier effect has worked itself out.

Unfortunately, single-region models for the two regions are only capable of analyzing the impacts on region A from the original demand change on the part of Region B, as if Region A were an isolated economy reacting only to exogenous

changes. No "feedback" analysis is possible with respect to Region B, thereby understating the total changes that affect the two regions taken together.

One response might be to create a combined table for the two regions, making them into one larger region. This logic may eventually lead us to the conclusion that only national tables are worthwhile, since any sub-national table would ignore the trade patterns and their impact. This would leave smaller regions without the ability to analyze specific effects from changing demands on their local industries. Region A and Region B may be different enough from one another so that separate tables would be useful to their individual planning needs.

An alternative approach to constructing a single table is to make the trade components either more detailed in their exogenous capacity or to make trade an endogenous component of each region's tables. Each region would retain their capacities for analyzing internal impacts from changing demands while the greater region will be capable of more accurate and detailed analysis.

EXAMPLE

A table is currently available for the Northeast Minnesota region that is scaled down from a larger, two-region table of the type described immediately above. This table is a 75-sector table; the direct and indirect component of this table is presented as an Appendix to this report. This table can be used to assess the impacts from changes in activity due to new forest product utilizations.

Assume, for example, that a new utilization of forest products in this region results in an increase in the exports of the Logging industry equal to \$1,000,000. Table 10 shows the interindustry direct and indirect effects from a hypothetical \$1 increase in Logging industry exports on selected industrial sectors in the region (sectors that interact with Logging to the extent of .3% or

more). These coefficients are then taken times the change in exogenous demand--\$1,000,000--to come up with the individual impacts.

For example, an increase of this type would require that the Forestry and Fisheries industry increase its output by \$38,263, the Agriculture, Forestry, and Fisheries Services industry increase its output by \$2,266, and so on through the extent of the Logging column. The total impact of \$1,331,689 shown at the bottom of Table 10 represents the total output impact of an increase in the sale of Logging on itself and on all other identified regional industries.

TABLE 10

TOTAL AND SELECTED IMPACTS FROM \$1,000,000 INCREASE IN LOGGING EXPORTS

<u>Industry</u>	<u>Industry Multiplier</u>	<u>Effect</u>
Forestry Fisheries Products	.038263	\$38,263
Agriculture, Forestry, Fisheries Services	.002266	2,266
Construction	.003830	3,830
Textile Goods	.003125	3,125
Logging	1.018443	1,018,443
Sawmills	.031502	31,502
Other Wood Products	.002395	2,395
Pulp and Paper Products	.002360	2,360
Printing and Publishing	.001167	1,167
Chemicals and Allied Products	.003993	3,993
Petroleum Refining and Production	.065266	65,266
Glass, Stone, Clay	.003043	3,043
Primary Iron and Steel	.015646	15,646
Fabricated Metals	.033094	33,094
Other Electrical	.005592	5,592
Railroad Transportation	.005796	5,796
Electric Utilities	.003546	3,546
Gas Utilities	.002888	2,888
Wholesale Trade	.025104	25,104
Retail Trade	.002585	2,585
Finance, Insurance	.004265	4,265
Real Estate	.003945	3,945
Business Services	.006784	6,784
Eating and Drinking Places	.003198	3,198
Automobile Repair	.008884	8,884
:	:	:
:	:	:
Total Interindustry	1.331689	1,331,689

APPENDIX

DIRECT AND INDIRECT EFFECTS OF \$1 INCREASE
IN FINAL PURCHASES FOR SPECIFIED INDUSTRY OUTPUT

INDUSTRY NAMES	1	2	3	4	5	6	7	8	9	10
(DOLLARS)										
DAIRY & POULTRY PROD.	1.001513	.001770	.002225	.002245	.000675	.025318	.000041	.000031	.000019	0
MEAT-AN. & PROD.	.000704	1.069455	.005087	.001659	.004562	.008178	.000044	.000043	.000025	0
FOOD- FEED GR.	.041330	.054441	1.004038	.000695	.000425	.007740	.000016	.000011	.000006	0
OTHER CROPS	.000299	.000155	.000435	1.002649	.012441	.004893	.000025	.000019	.000022	0
FOREST.. FISH. PROD.	.000029	.000019	.000022	.000040	1.000579	.000359	.000043	.000130	.000191	0
AGR. FOOD.. FISH. SERV	.054186	.023895	.019244	.011873	.025689	1.028285	.000639	.000185	.000143	0
IRON & FEPP. ORES	.000113	.000107	.000209	.000229	.000189	.000151	1.020514	.004786	.000917	0
NONFERROUS ORES	.000065	.000059	.000400	.000515	.000099	.000182	.005927	1.027226	.000119	0
COAL & HEAT MINING	.000040	.000044	.000026	.000079	.000014	.000043	.000246	.000133	1.003060	0
OIL & NAT. GAS	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	1.000000
STONE, CLAY MFG., QUAR.	.000145	.000126	.001174	.000697	.000082	.000238	.001306	.000214	.000118	0
OTHER MINING	0	0	0	0	0	0	0	0	0	0
NEW CONSTRUCTION	0	0	0	0	0	0	0	0	0	0
MAIN. & REP. CONSTR.	.004404	.009300	.014556	.013401	.002319	.014108	.029019	.007567	.004144	0
APPARANCE	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	0
MEAT PRODUCTS	.000758	.000791	.000595	.000799	.000594	.001471	.000469	.000487	.000290	0
DAIRY PRODUCTS	.000134	.000100	.000092	.000125	.000180	.000316	.000101	.000106	.000059	0
CANNED-FROZ.PRES.	.000220	.000131	.000134	.000179	.000159	.000241	.000079	.000086	.000046	0
GRAIN MILL. PROD.	.174886	.075661	.000923	.000602	.000451	.005027	.000023	.000024	.000011	0
BAKERY PROD.	.000081	.000067	.000063	.000066	.000244	.000221	.000072	.000076	.000042	0
ALCH. BEV.. SOFT DR.	.000029	.000026	.000028	.000038	.000059	.000082	.000027	.000029	.000016	0
MISC. FOOD. TOR.	.000708	.000339	.000076	.000100	.012660	.000240	.000073	.000078	.000045	0
TEXTILE GOODS	.002270	.000630	.003331	.001589	.027884	.011585	.000171	.000261	.000102	0
APPAREL. FASH. TEX.	.001161	.000551	.000420	.001770	.012526	.004065	.000260	.000340	.000304	0
LOGGING	.000200	.000121	.000277	.001494	.000198	.000632	.001043	.003347	.005824	0
SAWMILLS	.000300	.000145	.000258	.001961	.000202	.000752	.001446	.000281	.000297	0
OTHER WOOD PROD.	.000530	.000424	.000473	.012358	.000651	.004015	.000554	.000291	.000209	0
FURNITURE	.000003	.000000	.000004	.000009	.000013	.000008	.000007	.000004	.000003	0
PULP & PAPER PROD.	.000458	.000519	.000246	.001807	.001309	.002085	.000683	.000694	.000478	0
PAPERBOARD CONT.	.000854	.000411	.000459	.001377	.000705	.010364	.000232	.000351	.000117	0
PRINTING & PUBL.	.001629	.001541	.002726	.003534	.004190	.004380	.002445	.002291	.001142	0
CHEM. & ALLIED PROD.	.011177	.010553	.104106	.176728	.010842	.040842	.014276	.019641	.004027	0
PETR. REF. & PROD.	.020779	.020481	.073710	.063415	.054896	.045890	.029280	.029299	.021734	0
RUBBER PROD.	.000446	.000483	.001222	.001502	.000742	.000574	.002415	.004093	.001397	0
LEATHER PROD.	.000016	.000004	.000012	.000021	.000116	.000095	.000047	.000120	.000020	0
GLASS. STONE. CLAY	.000557	.000500	.001124	.001216	.000603	.001318	.001880	.002635	.003544	0
PRIMARY FE./STEELS	.001976	.001872	.002879	.002949	.003362	.002360	.026384	.018682	.013281	0
IRON & STEEL FOUND.	.000326	.000352	.000503	.000503	.000333	.000321	.016502	.013868	.001227	0
PRIMARY COPPER	.000040	.000033	.000123	.000153	.000090	.000075	.000355	.000317	.000148	0
OTHER PRIM. MET.	.000346	.000294	.001032	.001250	.000780	.000662	.001978	.005043	.000047	0
FABRICATED METALS	.003115	.001944	.002017	.002290	.010421	.003159	.005112	.004955	.001745	0
FARM MACHINERY	.005207	.004314	.009438	.008107	.000327	.005248	.000435	.000442	.000343	0
MACHINE SHOPS	.000154	.000144	.000179	.000217	.000124	.000134	.000305	.000312	.000407	0
OTHER NON. ELECTR.	.000471	.000457	.000451	.000441	.002480	.001258	.020291	.022176	.030307	0
COMP.. OFF. MACH.	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	0
SEPV. IND. MACH.	.000113	.000114	.000144	.000158	.000126	.000235	.000250	.000151	.000088	0
ELECTRICAL MACH.	.000228	.000221	.000333	.000327	.000534	.000602	.000621	.000593	.000529	0
MOTOR VEHICLES	.000151	.000144	.000130	.000176	.000142	.000538	.001415	.000238	.000073	0
OTHER TRANS. EQUIP.	.000044	.000041	.000077	.000070	.001014	.000072	.000074	.000019	.000014	0
PROP.. SCIENT.	.000014	.000015	.000012	.000015	.000017	.000041	.000020	.000028	.000014	0
OPTICAL. OPTHM.. PHO	.000037	.000027	.000043	.000056	.000054	.000136	.000041	.000055	.000023	0
MISC. MFG.	.000388	.000354	.000459	.000675	.002826	.001865	.002284	.000318	.000613	0
RAILROAD TRANS.	.012235	.004251	.009128	.009678	.003715	.005452	.007894	.006886	.003477	0
LOCAL TRANSIT	.000285	.000169	.000205	.000350	.000859	.001919	.001360	.000149	.000121	0
TRUCK TRANS.	.000709	.003262	.003779	.003381	.004774	.003196	.003389	.002192	.001141	0
AIR TRANS.	.000430	.000254	.000740	.000638	.000720	.004341	.000880	.000257	.000421	0
OTHER TRANS.	.001313	.001214	.000473	.002047	.001102	.001176	.000948	.001158	.000471	0
COMMUNICATIONS	.003051	.003440	.003944	.003628	.002639	.005538	.002126	.001756	.001172	0
ELECTRIC UTILITIES	.014984	.018415	.008820	.007903	.002835	.014284	.054752	.043481	.018745	0
GAS UTILITIES	.003562	.002932	.013170	.014248	.002504	.008452	.041365	.014309	.002743	0
WATER & SAN. SERV.	.000934	.000953	.007237	.004452	.010541	.000689	.007447	.001877	.000612	0
WHOLESALE TRADE	.034334	.041478	.032040	.044010	.029429	.026744	.020481	.029380	.015244	0
RETAIL TRADE	.005135	.002353	.001162	.007583	.001182	.000882	.001927	.001112	.000070	0
FINANCE. INS.	.011976	.014745	.011169	.012640	.008697	.010111	.006371	.008732	.007513	0
REAL ESTATE	.0070735	.024243	.073007	.053667	.008067	.020429	.109337	.008224	.015287	0
HOTELS. REPS.. REP.	.001252	.000945	.001170	.001664	.004103	.006531	.001628	.001223	.000438	0
BUSINESS SERV.	.007140	.006704	.010273	.012268	.012463	.028321	.014803	.008854	.007173	0
EAT. DRINK. PLACES	.002482	.002401	.002548	.003474	.003620	.008441	.002941	.003101	.001720	0
AUTOMOBILE REPAIR	.003980	.004154	.003367	.004824	.008437	.012567	.002394	.002564	.002887	0
MOTION PIC. & RECP.	.000116	.000114	.000115	.000142	.000130	.000296	.000140	.000116	.000047	0
HEALTH SERVICES	.000711	.003540	.000077	.000111	.000054	.001100	.000014	.000014	.000006	0
EDUC.. NONPR.	.000874	.000849	.000770	.001051	.000689	.003353	.001093	.001268	.000003	0
FED. GOVT. ENTER.	.002148	.002200	.002324	.002720	.001473	.003959	.005223	.003449	.001443	0
STATE & LOCAL ENTER.	.001470	.001637	.003441	.002708	.000740	.001701	.004715	.004074	.001541	0
SCRAP. USED & SECOND	.000280	.000151	.000188	.000217	.000872	.000238	.004454	.001268	.001755	0
SUB-TOTAL	1.488606	1.431266	1.443266	1.546341	1.298907	1.419203	1.489256	1.329025	1.187670	1.000000

DIRECT AND INDIRECT EFFECTS OF \$1 INCREASE
IN FINAL PURCHASES FOR SPECIFIED INDUSTRY OUTPUT
(continued)

INDUSTRY NAMES	11	12	13	14	15	16	17	18	19	20
(DOLLARS)										
DAIRY & POULTRY PROD.	.000041	0	.000052	.000023	0	.024912	.114734	.001507	.000144	.000334
MEAT AN. & PROD.	.000052	0	.000063	.000119	0	.108469	.000191	.006724	.000175	.000770
FOOD, FEED GR.	.000015	0	.000016	.000021	0	.006433	.004424	.000440	.033371	.000444
OTHER CROPS	.000014	0	.000105	.000044	0	.000041	.000169	.007789	.000045	.000475
FOREST., FISH, PROD.	.000019	0	.000182	.000158	0	.000015	.000012	.006234	.000014	.000039
AGR. FOR. FISH, SERV.	.000116	0	.000545	.000291	0	.003875	.006424	.001156	.000797	.000181
IRON & FERRO. ORES	.001064	0	.003211	.001044	0	.000063	.000055	.000148	.000063	.000076
NONFERROUS ORES	.001003	0	.000640	.000345	0	.000021	.000024	.000075	.000071	.000037
COAL & PEAT MINING	.000271	0	.000074	.000039	0	.000029	.000034	.000036	.000024	.000024
OIL & NAT. GAS	.000000	0	.000000	.000000	0	.000000	.000000	.000000	.000000	.000000
STONE, CLAY MFG., QUAR.	1.006442	0	.002247	.003345	0	.000034	.000043	.000054	.000242	.000051
OTHER MINING	0	1.000000	0	0	0	0	0	0	0	0
NEW CONSTRUCTION	0	0	1.000000	0	0	0	0	0	0	0
HAIR. & REP. CONSTR.	.013059	0	.003443	1.003774	0	.003007	.003771	.004637	.005227	.005420
MANUFACT.	.000000	0	.000000	.000000	1.000000	.000000	.000000	.000000	.000000	.000000
HEAT PRODUCTS	.000596	0	.000693	.001378	0	1.334703	.000937	.078469	.002258	.002739
DAIRY PRODUCTS	.000129	0	.000151	.000299	0	.000106	1.197449	.001116	.000114	.001579
CANNED-FRUIT, PRES.	.000100	0	.000110	.000211	0	.000767	.000102	1.009847	.000041	.003433
GRAIN MILL, PROD.	.000026	0	.000023	.000074	0	.011995	.020396	.000844	1.131440	.000515
BAKERY PROD.	.000092	0	.000108	.000212	0	.000115	.001647	.008172	.000124	1.013541
ALCH. BEV., SOFT DR.	.000035	0	.000041	.000079	0	.000033	.000045	.001591	.000078	.000063
MISC. FOOD, TOR.	.000093	0	.000111	.000213	0	.003821	.000383	.007243	.004106	.015544
TEXTILE GOODS	.000244	0	.000539	.001206	0	.000200	.000325	.000379	.001413	.000176
APPAREL, FUR, TEX.	.000646	0	.000730	.000997	0	.000416	.000304	.000505	.004427	.000445
LOGGING	.000362	0	.004700	.003933	0	.000157	.000157	.000325	.000117	.000327
SAWMILLS	.000452	0	.010776	.006676	0	.000116	.000113	.000173	.000044	.000139
OTHER WOOD PROD.	.000049	0	.018442	.010414	0	.000434	.000259	.000346	.000137	.000154
FURNITURE	.000008	0	.000110	.000094	0	.000001	.000001	.000003	.000007	.000007
PULP & PAPER PROD.	.002047	0	.002489	.002074	0	.001372	.001505	.003557	.001000	.003954
PAPERBOARD CONT.	.000341	0	.000474	.000458	0	.003443	.018554	.018360	.001105	.009204
PRINTING & PUBL.	.003341	0	.003245	.002323	0	.005598	.001434	.008650	.001454	.017549
CHEM. & ALLIED PROD.	.014104	0	.004408	.015125	0	.002175	.002273	.007296	.015721	.004109
PETRO. REF. & PROD.	.107574	0	.003216	.074784	0	.007450	.012304	.012044	.011243	.013203
RUBBER PROD.	.003367	0	.001475	.002254	0	.001516	.001271	.004067	.000974	.003100
LEATHER PROD.	.000046	0	.000019	.000024	0	.000013	.000007	.000011	.000043	.000009
GLASS, STONE, CLAY	.043016	0	.035224	.032125	0	.000412	.000452	.001134	.000442	.000493
PRIMARY FE/STEELS	.034339	0	.034708	.017927	0	.001134	.000972	.002635	.001004	.001341
IRON & STEEL FOUND.	.006432	0	.002406	.001131	0	.000094	.000086	.000259	.000144	.000134
PRIMARY COPPER	.000391	0	.000044	.000136	0	.000012	.000015	.000066	.000024	.000021
OTHER PRIM. MET.	.002007	0	.002735	.002070	0	.000134	.000163	.000509	.000245	.000231
FABRICATED METALS	.005791	0	.014000	.012442	0	.000555	.000472	.008440	.000477	.001120
FARM MACHINERY	.000737	0	.000734	.000145	0	.000741	.000643	.000191	.000377	.000041
MACHINE SHOPS	.000041	0	.000714	.000374	0	.000084	.000119	.000294	.000115	.000241
OTHER NON. ELECTR.	.000045	0	.013141	.011514	0	.000327	.000373	.000956	.000351	.000350
COMP., OFF. MACH.	.000000	0	.000000	.000000	0	.000000	.000000	.000000	.000000	.000000
SERV. IND. MACH.	.000243	0	.001577	.006344	0	.000052	.000324	.000725	.000074	.000109
ELECTRICAL MACH.	.000664	0	.003544	.004744	0	.000093	.000126	.000191	.000131	.000160
MOTOR VEHICLES	.000815	0	.000144	.000171	0	.000057	.000107	.000097	.000049	.000135
OTHER TRANS. EQUIP.	.000035	0	.000037	.000021	0	.000011	.000014	.000026	.000015	.000016
PHARM. SCIENT.	.000026	0	.000049	.000060	0	.000010	.000017	.000018	.000012	.000012
OPTICAL, PHOTO., PHO	.000074	0	.000040	.000050	0	.000028	.000029	.000057	.000025	.000045
MISC. MFG.	.000032	0	.001422	.004441	0	.000251	.000305	.000472	.000244	.000509
RAILROAD TRANS.	.000452	0	.011102	.004612	0	.000304	.004250	.000477	.027452	.014077
LOCAL TRANSIT	.000015	0	.000246	.000259	0	.000108	.000154	.000521	.000444	.000240
TRUCK TRANS.	.003737	0	.005457	.004216	0	.004355	.002476	.016877	.006045	.003540
AIR TRANS.	.000475	0	.000410	.000455	0	.000267	.000505	.001157	.000613	.000610
OTHER TRANS.	.001444	0	.002004	.001703	0	.000552	.000512	.001811	.002044	.000991
COMMUNICATIONS	.001113	0	.003349	.004320	0	.001714	.002096	.003351	.002443	.004224
ELECTRIC UTILITIES	.000041	0	.005275	.005454	0	.004629	.011394	.012173	.007444	.007511
GAS UTILITIES	.023147	0	.004042	.003973	0	.004144	.004054	.007084	.004303	.004444
WATER & SAN. SERV.	.000034	0	.001077	.001974	0	.000045	.000490	.003309	.000417	.000404
WHOLESALE TRADE	.002543	0	.011747	.037012	0	.000263	.026247	.062414	.044149	.027374
RETAIL TRADE	.001755	0	.020457	.042171	0	.000073	.001770	.001105	.000747	.001440
FINANCE, INS.	.014096	0	.004443	.007976	0	.004277	.004947	.004409	.005116	.004445
REAL ESTATE	.030132	0	.005454	.009840	0	.005226	.005990	.006641	.004114	.007704
HOTELS, REPS., REP.	.001454	0	.001708	.001344	0	.001306	.002444	.003694	.001495	.003019
BUSINESS SERV.	.020014	0	.027515	.012926	0	.005570	.010049	.018262	.004672	.014910
EAT. DRINK PLACES	.007716	0	.004444	.004474	0	.002570	.003244	.004204	.002701	.002447
AUTOMOBILE REPAIR	.000770	0	.005510	.005034	0	.002063	.004444	.003708	.002471	.004184
MOTION PICT. & RECR.	.000164	0	.000178	.000253	0	.000107	.000164	.000234	.000104	.000145
HEALTH SERVICES	.000023	0	.000008	.000013	0	.000060	.001134	.000046	.000011	.000013
EDUC., RESEARCH	.000105	0	.000745	.001274	0	.000667	.000943	.001191	.000504	.001444
FED. GOVT. ENTER.	.004747	0	.001444	.002797	0	.001670	.002777	.002252	.002742	.004145
STATE & LOCAL ENTER.	.006417	0	.001145	.001424	0	.001023	.001160	.002423	.001004	.001141
SEMP. UNEMP. & SECUR.	.003354	0	.000740	.000471	0	.000297	.000075	.000327	.001770	.000040
SUB-TOTAL	1.551022	1.000000	1.344734	1.707452	1.000000	1.616354	1.448941	1.376001	1.371474	1.227422

DIRECT AND INDIRECT EFFECTS OF \$1 INCREASE
IN FINAL PURCHASES FOR SPECIFIED INDUSTRY OUTPUT
(continued)

INDUSTRY	NAMES	21	22	23	24	25	26	27	28	29	30
(DOLLARS)											
1	DAIRY & POULTRY PROD.	.001442	.000492	.000050	.000077	.000085	.000072	.000073	.000078	.000040	.000047
2	MEAT AN. & PROD.	.000044	.001104	.003095	.000274	.000235	.000127	.000106	.000168	.000088	.000045
3	FOOD, FEED GR.	.000071	.000355	.000173	.000028	.000033	.000024	.000026	.000023	.000314	.000026
4	OTHER CROPS	.000043	.002012	.000786	.000149	.003363	.001186	.000363	.000143	.000258	.000027
5	FOREST., FISH, PROD.	.000041	.000154	.000069	.000195	.003243	.013397	.003979	.001256	.002946	.000129
6	AGR. FOR. FISH, SERV	.000182	.000292	.000111	.000457	.002266	.001458	.000739	.000684	.000503	.000199
7	IRON & FEER. ORES	.000245	.000074	.000238	.000146	.000857	.000532	.000844	.002260	.000254	.000428
8	NONFERROUS ORES	.000075	.000063	.000167	.000062	.000195	.000153	.000300	.000486	.000780	.000249
9	COAL & PEAT MINING	.000056	.000027	.000063	.000040	.000155	.000186	.000121	.000105	.000700	.000057
0	OIL & NAT. GAS	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
1	STONE, CLAY, WEG., QUAR.	.000040	.000033	.000159	.000047	.000117	.000175	.000337	.000209	.002496	.000144
2	OTHER MINING	0	0	0	0	0	0	0	0	0	0
3	NEW CONSTRUCTION	0	0	0	0	0	0	0	0	0	0
4	MAIN. & REP. CONST.	.003546	.002827	.005095	.003112	.003830	.007713	.007811	.006503	.013891	.009444
5	APPRIANCE	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
6	MEAT PRODUCTS	.000072	.002587	.000732	.001971	.000544	.000564	.001004	.001130	.000849	.000770
7	DAIRY PRODUCTS	.014688	.004455	.000154	.000173	.000111	.000140	.000212	.000237	.000184	.000147
8	CANNED FRUIT, PRES.	.004126	.005412	.000118	.000121	.000080	.000099	.000160	.000167	.000134	.000124
9	GRAIN MILL. PROD.	.000266	.000311	.000245	.000040	.000036	.000027	.000038	.000035	.000037	.000028
0	BAKERY PROD.	.000156	.012507	.000107	.000123	.000084	.000102	.000152	.000169	.000171	.000118
1	ALCH. BEV., SOFT DR.	.005769	.002040	.000041	.000044	.000030	.000078	.000057	.000063	.000049	.000044
2	MISC. FOOD, TOR.	.000425	1.003892	.000109	.000125	.000559	.000271	.000207	.000186	.000171	.000126
3	TEXTILE GOODS	.000086	.000159	1.044787	.041155	.003125	.001198	.000526	.023476	.000400	.000111
4	APPAREL, FAB. TEX.	.000258	.000225	.004997	1.177530	.001704	.001242	.000713	.006380	.000580	.000480
5	LOGGING	.000123	.000144	.001505	.000544	1.018443	.356507	.105691	.033205	.073976	.003214
6	SAWMILLS	.000757	.000044	.001005	.000643	.031502	1.084573	.152348	.093160	.018442	.001078
7	OTHER WOOD PROD.	.001081	.000140	.004236	.002254	.002395	.016779	1.074807	.048851	.002998	.001160
8	FURNITURE	.000002	.000002	.000778	.000066	.000018	.000458	.000509	1.006551	.000011	.000003
9	PULP & PAPER PROD.	.001488	.002228	.014008	.007583	.002340	.001968	.015047	.002449	1.009974	.041520
0	PAPERBOARD CONT.	.007172	.000412	.004995	.004282	.000565	.000501	.006542	.006312	.001713	1.006354
1	PRINTING & PUBL.	.006450	.004804	.007875	.004234	.001167	.001910	.002485	.003082	.002641	.007450
2	CHEM. & ALLIED PROD.	.002054	.005542	.022741	.004887	.003993	.003215	.020979	.007794	.017438	.018002
3	PETR. REF. & PROD.	.010242	.007057	.013858	.009570	.005266	.044171	.026539	.016399	.034454	.019788
4	RUBBER PROD.	.000083	.002305	.004974	.003341	.001948	.001312	.001661	.001028	.001049	.000663
5	LEATHER PROD.	.000007	.000010	.001543	.008543	.000052	.000035	.000030	.006331	.000088	.000014
6	GLASS, STONE, CLAY	.001148	.000441	.006323	.001367	.003043	.009331	.019927	.001999	.002451	.001173
7	PRIMARY FE/STEELS	.004470	.001714	.003931	.002604	.015646	.009398	.014648	.041456	.004788	.007719
8	IRON & STEEL FOUND.	.000771	.000147	.000763	.000187	.005095	.002135	.001182	.001319	.000715	.000375
9	PRIMARY COPPER	.000094	.000031	.000072	.000054	.000275	.000159	.000221	.000424	.000000	.000130
0	OTHER PRIM. MET.	.000759	.000277	.000857	.000445	.001929	.001275	.001734	.000978	.000308	.002300
1	FABRICATED METALS	.015056	.003331	.001495	.003715	.033094	.019580	.025587	.046268	.005409	.003385
2	FARM MACHINERY	.000102	.000084	.000144	.000441	.000203	.000176	.000113	.000149	.000099	.000088
3	MACHINE SHOPS	.000389	.000144	.000543	.000353	.000423	.000710	.000742	.000751	.000427	.000555
4	OTHER NON. ELECTR.	.000388	.000300	.000971	.001396	.005592	.004619	.002325	.002105	.001415	.001841
5	COMP. OFF. MACH.	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
6	SEMV. IND. MACH.	.000091	.000047	.000103	.000061	.000147	.000177	.000254	.000243	.000152	.000102
7	ELECTRICAL MACH.	.000172	.000114	.000257	.000180	.000487	.000353	.000360	.001149	.000318	.000203
8	MOTOR VEHICLES	.000105	.000067	.000106	.000177	.000553	.000413	.000194	.000164	.000129	.000084
9	OTHER TRANS. EQUIP.	.000027	.000023	.000025	.000047	.000056	.000071	.000076	.000303	.000021	.000024
0	PROP. & SCIENT.	.000023	.000022	.000057	.000023	.000018	.000016	.000040	.000119	.000034	.000027
1	OPTICAL, OPTHM., PHO	.000057	.000042	.000517	.000077	.000041	.000044	.000091	.000105	.000144	.000052
2	MISC. WEG.	.000077	.000344	.003707	.012102	.001171	.000784	.006501	.005129	.000462	.001341
3	ROAD TRANSP.	.005724	.005218	.010055	.003344	.005796	.022982	.028106	.019445	.030019	.034110
4	LOCAL TRANSIT	.000246	.000730	.002709	.001390	.000496	.000534	.000405	.0001819	.000878	.001018
5	TRUCK TRANS.	.003716	.004404	.004550	.004240	.002597	.003460	.005177	.004346	.004416	.005202
6	AIR TRANS.	.000407	.000431	.002448	.001247	.000727	.000897	.001877	.002510	.001784	.001372
7	OTHER TRANS.	.000906	.004437	.002186	.000417	.001741	.002131	.002315	.001340	.002678	.001291
8	COMMUNICATIONS	.003984	.002365	.002777	.003762	.001396	.002535	.003556	.004187	.002673	.003610
9	ELECTRIC UTILITIES	.004790	.004224	.015541	.010893	.003549	.017237	.021407	.013959	.031950	.011877
0	GAS UTILITIES	.003955	.003735	.007727	.004677	.002888	.006192	.016358	.006970	.022479	.007153
1	WATER & SAN. SERV.	.000075	.000104	.004473	.002017	.001163	.002235	.001651	.002130	.005043	.001214
2	WHOLESALE TRADE	.021956	.023797	.034460	.040296	.025104	.035333	.044442	.049677	.027445	.023832
3	RETAIL TRADE	.001217	.000661	.000745	.000724	.002585	.002899	.001598	.001337	.001417	.001147
4	FINANCE, INS.	.005743	.003712	.004430	.004924	.004265	.008212	.007145	.008279	.005372	.004081
5	REAL ESTATE	.007853	.005591	.014193	.011134	.003945	.005977	.009342	.011520	.007454	.010194
6	HOTELS, PERS., REP.	.001832	.002734	.010146	.005779	.001610	.002289	.002512	.003817	.003243	.005834
7	BUSINESS SERV.	.005061	.020124	.010741	.012726	.006784	.010540	.013273	.016359	.012974	.011646
8	EAT. DRINK. PLACES	.004112	.002939	.004267	.004980	.003198	.004042	.006194	.006877	.005746	.004411
9	AUTOMOBILE REPAIR	.004438	.003084	.002483	.002043	.000884	.010109	.006102	.004660	.002519	.002593
0	MOTION PIC. & RECR.	.000176	.000123	.000132	.000214	.000087	.000137	.000232	.000219	.000156	.000170
1	HEALTH SERVICES	.000023	.000015	.000018	.000012	.000010	.000015	.000013	.000014	.000011	.000007
2	EDUC. HONOR.	.002922	.000614	.001131	.002500	.001036	.001679	.001845	.002431	.001074	.001282
3	FED. GOV'T. ENTER.	.003260	.001702	.003509	.004398	.000976	.002490	.003770	.003443	.003714	.002414
4	STATE & LOCAL ENTER.	.001045	.001139	.002224	.001423	.001224	.002609	.002500	.002055	.005748	.001491
5	SCRAP, USED & SECOND	.000109	.000133	.005719	.000479	.000334	.000743	.000608	.000888	.000410	.000444
SUB-TOTAL		1.294102	1.175257	1.404709	1.417079	1.331649	1.734252	1.678947	1.561677	1.797067	1.269529

DIRECT AND INDIRECT EFFECTS OF \$1 INCREASE
IN FINAL PURCHASES FOR SPECIFIED INDUSTRY OUTPUT
(continued)

INDUSTRY	41	42	43	44	45	46	47	48	49	50
(DOLLARS)										
DAIRY & DAIRY PROD.	.000061	.000062	.000072	.000066	0	.000062	.000072	.000067	.000067	.000128
MEAT AN. & PROD.	.000042	.000044	.000103	.000091	0	.000044	.000110	.000064	.000150	.000678
FOOD, FEED M.	.000016	.000020	.000016	.000014	0	.000015	.000017	.000012	.000020	.000055
OTHER FOODS	.000020	.000014	.000018	.000015	0	.000017	.000018	.000015	.000045	.000040
FOREST., FISH, PROD.	.000074	.000043	.000072	.000036	0	.000044	.000038	.000037	.000040	.000054
AGR. FISH. & FISH. SERV.	.000174	.000301	.000243	.000193	0	.000223	.000279	.000190	.000311	.000259
PROD. & FEED. PROD.	.012220	.007640	.005126	.007025	0	.005234	.004339	.004874	.005201	.007131
NONFERRIC METS	.003477	.000440	.002536	.001125	0	.002063	.003170	.001230	.001401	.000500
COAL & HEAT MINING	.000256	.000172	.000157	.000140	0	.000132	.000111	.000131	.000126	.000075
OIL & NAT. GAS	.000000	.000000	.000000	.000000	0	.000000	.000000	.000000	.000000	.000000
STONE, CLAY NEG., GLA.	.000275	.000160	.000191	.000195	0	.000155	.000118	.000153	.000177	.000410
OTHER MINING	0	0	0	0	0	0	0	0	0	0
NEW CONSTRUCTION	0	0	0	0	0	0	0	0	0	0
HAIR, & REP. CONST.	.000004	.005461	.005797	.004676	0	.004700	.005004	.005167	.005269	.005047
RENTANCE	.000000	.000000	.000000	.000000	0	.000000	.000000	.000000	.000000	.000000
HEAT PRODUCTS	.000044	.000040	.001153	.001077	0	.001037	.001307	.000714	.001402	.007147
DAIRY PRODUCTS	.000204	.000214	.000258	.000242	0	.000224	.000288	.000152	.000271	.000344
CANNED FRUIT, PRES.	.000144	.000150	.000174	.000160	0	.000154	.000193	.000109	.000220	.000235
CHEESE MILK, PROD.	.000024	.000181	.000027	.000024	0	.000025	.000031	.000019	.000036	.000009
BAKERY PROD.	.000145	.000155	.000183	.000172	0	.000159	.000202	.000109	.000228	.000243
ALCH. BEV., SOFT DR.	.000054	.000052	.000067	.000064	0	.000059	.000074	.000042	.000045	.000040
MISC. FOOD, TOP.	.000146	.000155	.000180	.000172	0	.000179	.000200	.000110	.000239	.000254
TEXTILE GOODS	.000472	.000384	.004404	.000327	0	.000338	.000348	.001506	.000717	.018401
APPAREL, FAN, TEL.	.000015	.000027	.000056	.000039	0	.000050	.000045	.018307	.004710	.003944
LOGGING	.001700	.000061	.000774	.000764	0	.000972	.000787	.000793	.004112	.001243
SAWMILLS	.007146	.002415	.000750	.001304	0	.002113	.001573	.001735	.015419	.001056
OTHER WOOD PROD.	.014421	.001944	.000046	.001444	0	.002411	.002234	.002501	.004710	.000844
FURNITURE	.000047	.000035	.000015	.000057	0	.000070	.000044	.000230	.001104	.000179
PULP & PAPER PROD.	.001443	.000785	.000472	.000774	0	.002051	.002019	.001149	.000117	.012087
PAPERBOARD, CONT.	.001441	.001114	.002813	.000424	0	.003029	.003893	.001174	.000477	.002946
PRINTING, PUBL.	.003442	.002744	.002795	.002509	0	.002421	.002884	.002411	.002913	.005243
CHEM. & ALLIED PROD.	.009361	.002240	.003409	.001150	0	.004835	.005479	.004802	.005414	.004910
PLAST. & RUB. PROD.	.014905	.011472	.003409	.012740	0	.016315	.011442	.004948	.015054	.015047
RUBBER PROD.	.004352	.000414	.001437	.000404	0	.004777	.003810	.007123	.002017	.004431
LEATHER PROD.	.000052	.000040	.000040	.000034	0	.000042	.000041	.000132	.000048	.000124
GLASS, STONE, CLAY	.005211	.000052	.007002	.005710	0	.005344	.003319	.005710	.004783	.011452
PRIMARY METALS	.224444	.142254	.070444	.122544	0	.074671	.078257	.084754	.097054	.074041
IRON & STEEL FOUND.	.017735	.027423	.014474	.017352	0	.010451	.002779	.024122	.000443	.002818
PRIMARY COPPER	.005751	.000452	.002373	.001281	0	.002943	.005454	.001521	.001720	.004207
OTHER METAL, NET.	.002329	.000444	.003451	.002346	0	.004459	.041001	.014524	.018725	.134772
FABRICATED METALS	1.003724	.004044	.017711	.016112	0	.004283	.020938	.007735	.017514	.002427
MACHINERY	.001706	1.003271	.000398	.011091	0	.001216	.000000	.000704	.002445	.000148
MACHINE SHOPS	.003730	.005414	1.004619	.007905	0	.002100	.001472	.005174	.002112	.001252
OTHER NON. ELECTR.	.000001	.001758	.011745	1.004747	1.000000	.000000	.000000	.000000	.000000	.000000
COMP. OFF. MACH.	.000000	.000000	.000000	.000000	0	.000000	.000000	.000000	.000000	.000000
SERV. IND. MACH.	.000753	.000441	.000764	.000622	0	.019471	.001449	.003315	.004452	.000124
ELECTRICAL MACH.	.001472	.002024	.000707	.002144	0	.003404	1.001454	.004544	.002400	.002445
TRUCK VEHICLES	.000620	.002457	.000043	.000040	0	.007000	.000792	1.001785	.001701	.000500
OTHER TRANS. EQUIP.	.000027	.007140	.000015	.000174	0	.000047	.000042	.000001	1.002714	.000040
PROP. EQUIP.	.000111	.000072	.000072	.000062	0	.004400	.000752	.000474	.001423	1.001423
OPTICAL, OPTH., PHO	.000135	.000104	.000138	.000173	0	.000125	.000081	.000183	.000243	.003935
MISC. SER.	.002423	.001445	.001498	.001182	0	.004048	.001875	.001046	.003933	.009351
RAILROAD TRANS.	.014151	.004400	.007558	.000455	0	.000225	.001738	.013358	.011750	.007859
LOCAL TRANSIT	.001204	.000384	.001006	.000533	0	.000784	.001316	.000556	.000750	.003550
TRUCK TRANS.	.004488	.003471	.003706	.003117	0	.003741	.003037	.004011	.003778	.004705
AIR TRANS.	.002174	.001134	.001003	.001175	0	.001105	.001233	.000874	.000401	.002205
OTHER TRANS.	.001758	.001199	.001150	.001085	0	.001060	.000819	.001007	.001100	.000749
COMMUNICATIONS	.003445	.003444	.003444	.004171	0	.004273	.004179	.002678	.003446	.004500
ELECTRIC UTILITIES	.017744	.011744	.016006	.012425	0	.011553	.012522	.010598	.012709	.013283
GAS UTILITIES	.012900	.004413	.005223	.008746	0	.007932	.006973	.006711	.005071	.004997
WATER & SAN. SERV.	.002018	.001201	.000091	.001179	0	.001698	.001623	.001327	.001240	.001277
WHOLESALE TRADE	.011229	.000011	.002453	.037002	0	.003879	.027507	.049235	.039076	.034455
RETAIL TRADE	.001254	.001017	.001493	.001102	0	.001344	.000984	.001050	.001415	.001445
FINANCE, INS.	.004275	.007307	.004471	.004254	0	.005456	.006209	.004675	.005247	.007711
REAL ESTATE	.003634	.004454	.013440	.008144	0	.008773	.011434	.004677	.006741	.010492
HOTELS, REST., REP.	.003047	.003044	.003440	.002345	0	.004191	.004527	.002874	.002948	.002274
BUSINESS SERV.	.010476	.010441	.010450	.013182	0	.014229	.014293	.013254	.014479	.038478
EAT. & DRINK. PLACES	.005031	.006394	.007064	.007140	0	.006562	.008363	.004444	.009524	.010021
VEHICLE REPAIR	.002434	.002274	.002211	.002184	0	.003825	.003380	.007443	.002743	.004304
NOTION, P.C., REPR.	.000107	.000201	.000205	.000207	0	.000224	.000244	.000160	.000250	.000363
HEALTH SERVICES	.000011	.000012	.000011	.000010	0	.000009	.000011	.000008	.000010	.000014
EDUC. REPR.	.001348	.001384	.001497	.001540	0	.001424	.001494	.001125	.001243	.002550
FED. GOVT. ENTER.	.003277	.003331	.003037	.002984	0	.002632	.002817	.002782	.002418	.003921
STATE & LOCAL ENTER.	.002417	.001541	.001711	.001554	0	.001695	.001677	.001497	.001450	.001781
SCRAP, USED & SECOND	.004108	.003144	.002407	.002734	0	.003099	.002958	.002404	.001445	.005172
SUB-TOTAL	1.500141	1.491411	1.396754	1.488462	1.000000	1.410229	1.363823	1.448290	1.416544	1.497415

DIRECT AND INDIRECT EFFECTS OF \$1 INCREASE
IN FINAL PURCHASES FOR SPECIFIED INDUSTRY OUTPUT
(continued)

INDUSTRY	NAMES	51	52	53	54	55	56	57	58	59	60
(DOLLARS)											
DAIRY & POULTRY PROD.		.000003	.000172	.000044	.000026	.000057	.000050	.000078	.000141	.000037	.000013
MEAT AN. A PROD.		.000132	.000447	.000070	.000034	.000091	.000070	.000113	.000129	.000070	.000017
FOOD, FEED GR.		.000025	.000059	.000015	.000010	.000062	.000048	.000021	.000128	.000051	.000005
OTHER CROPS		.000026	.000051	.000035	.000004	.000010	.000047	.000021	.000031	.000035	.000011
FOREST, FISH, PROD.		.000044	.000031	.000024	.000007	.000011	.000055	.000017	.000015	.000014	.000004
APP. FOR FISH. SERV.		.000051	.000041	.000052	.000027	.000047	.000049	.000032	.000044	.000077	.000005
IRON & FEED. ORES		.000175	.000241	.000098	.000015	.000047	.000043	.000036	.000044	.000077	.000005
NONFERROUS ORES		.000172	.000126	.000018	.000006	.000029	.000008	.000025	.000023	.000042	.000017
COAL & PEAT MINING		.000027	.000010	.000052	.000030	.000014	.000034	.000100	.000034	.000028	.000023
OIL & NAT. GAS		.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
STONE, CLAY MFG., QUAR.		.000137	.000315	.000092	.000006	.000004	.000148	.000177	.000096	.000106	.000054
OTHER MINING		0	0	0	0	0	0	0	0	0	0
NEW CONSTRUCTION		0	0	0	0	0	0	0	0	0	0
MAIN. & REP. CONSTR.		.000044	.000226	.000041	.000541	.000505	.000044	.024787	.026611	.038182	.015102
REPAIRANCE		.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
MEAT PRODUCTS		.001844	.005443	.000016	.000306	.000931	.008576	.001200	.001044	.000428	.000125
DAIRY PRODUCTS		.000742	.000384	.000180	.000001	.000204	.001823	.000235	.000140	.000044	.000004
CANNED FROZ. PRES.		.000741	.000265	.000123	.000043	.000138	.001851	.000204	.000153	.000075	.000029
GRAIN MILL. PROD.		.000045	.000041	.000021	.000012	.000021	.000164	.000030	.000049	.000037	.000005
BAKERY PROD.		.000243	.000272	.000130	.000045	.000145	.001345	.000204	.000167	.000098	.000030
ALCH. BEV., SOFT DR.		.000090	.000100	.000047	.000024	.000054	.000501	.000076	.000050	.000034	.000011
MISC. FOOD, TOB.		.000240	.000244	.000046	.000064	.000143	.001144	.000191	.000160	.000008	.000029
TEXTILE GOODS		.000747	.000450	.000076	.000159	.000173	.000218	.004414	.000128	.000147	.000030
APPAREL, FASH. TEX.		.000502	.005114	.000723	.001476	.001200	.001013	.001022	.000409	.000379	.000113
LOGGING		.001176	.007614	.000431	.000103	.000118	.000149	.000262	.000194	.000234	.000075
SAWMILLS		.000560	.015341	.000077	.000098	.000125	.000125	.000222	.000222	.000222	.000110
OTHER WOOD PROD.		.000478	.021609	.001177	.000194	.000265	.000185	.000750	.000338	.000464	.000173
FURNITURE		.000021	.000274	.000011	.000002	.000002	.000002	.000007	.000007	.000004	.000002
PULP & PAPER PROD.		.015215	.013471	.001249	.000775	.000954	.001597	.001315	.001144	.000000	.000209
PAPERBOARD CONT.		.002377	.011591	.000238	.000287	.000478	.000399	.000313	.000117	.000149	.000027
PRINTING & PUBL.		.004484	.002279	.003066	.002748	.003913	.005514	.004804	.006374	.003143	.000957
CHEM. & ALLIED PROD.		.011244	.011754	.004501	.003278	.001551	.001278	.002848	.001131	.004437	.000491
RETR. REF. & PROD.		.017224	.024893	.001159	.070430	.069720	.142457	.107504	.005594	.074752	.003199
RUBBER PROD.		.000094	.000557	.000046	.000125	.002066	.000468	.000793	.000234	.000449	.000074
LEATHER PROD.		.000050	.001350	.000012	.000014	.000012	.000012	.000018	.000011	.000008	.000003
GLASS, STONE, CLAY		.002725	.000445	.003766	.000028	.000041	.000759	.001326	.000934	.001514	.000516
PRIMARY FERROUS		.024054	.050400	.007014	.002384	.000013	.000723	.006377	.000754	.001710	.001544
IRON & STEEL FOUND.		.001114	.002337	.003476	.001173	.000150	.000240	.010082	.000051	.000118	.000031
PRIMARY COPPER		.002437	.001724	.000128	.000007	.000025	.000030	.000173	.000050	.000042	.000010
OTHER PRIM. MET.		.052277	.010444	.001096	.000533	.000244	.000345	.001404	.000190	.000287	.000078
FABRICATED METALS		.000421	.000752	.000301	.005145	.001544	.000766	.005426	.000582	.000088	.000262
FARM MACHINERY		.000107	.000177	.000042	.000071	.000047	.000066	.000190	.000004	.000047	.000014
MACHINE SHOWS		.000151	.001247	.000211	.000272	.000275	.000245	.000084	.000037	.000047	.000011
OTHER NON. ELECTR.		.000007	.001914	.000472	.000954	.000275	.000275	.001642	.000351	.001104	.000227
COMP., OFF. MACH.		.000006	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
SERV. IND. MACH.		.000273	.000321	.000471	.000323	.000442	.000091	.000214	.000212	.000274	.000105
ELECTRICAL MACH.		.000127	.001049	.001242	.000478	.000478	.001241	.000468	.001781	.000784	.000201
MOTOR VEHICLES		.000124	.000100	.000104	.001378	.001200	.000047	.000134	.000064	.000047	.000019
OTHER TRANS. EQUIP.		.000039	.000024	.000033	.000020	.000020	.000044	.001587	.000024	.000013	.000004
PROP., SCIENT.		.000026	.000000	.000028	.000010	.000024	.000044	.001571	.000026	.000017	.000008
OPTICAL, OPTHM., PHO		1.032545	.000224	.000048	.000034	.000049	.000045	.000107	.000178	.000077	.000014
MISC. MFG.		.015000	1.042047	.000043	.000003	.000545	.001106	.002070	.000961	.000710	.000204
RAILROAD TRANS.		.000065	.001140	1.054185	.002323	.007026	.009945	.002594	.000700	.006228	.000383
LOCAL TRANSIT		.000027	.001045	.000731	1.002400	.001924	.000247	.000283	.000674	.000133	.000120
TRUCK TRANS.		.000070	.000011	.000073	.000431	1.048073	.000478	.002382	.000999	.002382	.000249
AIR TRANS.		.001242	.001948	.000450	.000176	.000238	1.008727	.000365	.000621	.000409	.000194
OTHER TRANS.		.001401	.001241	.000448	.001114	.000463	.016497	1.213369	.000193	.001400	.000024
COMMUNICATIONS		.000006	.000285	.000036	.000032	.011997	.000175	.000269	1.012434	.003128	.001351
ELECTRIC UTILITIES		.001144	.015240	.017130	.000735	.003531	.007701	.023114	.012604	1.098744	.005280
GAS UTILITIES		.000915	.000497	.005714	.004808	.002280	.005208	.008222	.002407	.060419	1.092422
WATER & SAN. SERV.		.001061	.002362	.003317	.003014	.000641	.006836	.001897	.001529	.001828	.000447
WHOLESALE TRADE		.000451	.002215	.012024	.018946	.025618	.018280	.017529	.004234	.010407	.001348
RETAIL TRADE		.000123	.001985	.005172	.005740	.012739	.001285	.002242	.001912	.002773	.000922
FINANCE, INS.		.010774	.015614	.007273	.013070	.012494	.021971	.032055	.009727	.007750	.004745
REAL ESTATE		.010058	.016925	.011402	.013141	.011144	.010092	.021144	.022578	.002006	.003844
HOTELS, REPS., REP.		.000740	.001883	.001171	.001704	.001704	.003284	.002209	.006703	.004541	.002078
BUSINESS SERV.		.000022	.000043	.012544	.014895	.015717	.025506	.025393	.022207	.008547	.003941
EAT. DRINK. PLACES		.010007	.011217	.005248	.002644	.006053	.021429	.006344	.006844	.004004	.001252
AUTOMOBILE REPAIR		.000044	.000071	.002459	.027337	.033097	.002255	.003915	.003251	.002541	.000747
MOTION PIC. & RECR.		.000033	.000044	.000042	.000154	.000357	.000741	.000329	.020278	.000178	.000051
HEALTH SERVICES		.000017	.000027	.000012	.000021	.000039	.000044	.000062	.000010	.000034	.000011
EDUC., NONPR.		.004710	.000761	.001012	.001450	.001706	.001541	.001294	.001966	.000557	.000500
FED. GOV'T. ENTER.		.003978	.005945	.005081	.003457	.003447	.002442	.009417	.007435	.041003	.023244
STATE & LOCAL ENTER.		.001439	.002754	.003139	.000491	.002776	.017544	.049751	.002144	.065413	.014951
SCRAP, USED & SECOND		.002419	.001741	.000157	.000380	.000108	.000048	.000183	.000036	.000057	.000027
SUB-TOTAL		1.402240	1.531830	1.379447	1.246915	1.303533	1.387843	1.428763	1.196173	1.474025	1.462544

DIRECT AND INDIRECT EFFECTS OF \$1 INCREASE
IN FINAL PURCHASES FOR SPECIFIED INDUSTRY OUTPUT
(continued)

INDUSTRY	61	62	63	64	65	66	67	68	69	70
(DOLLARS)										
DAIRY & POULTRY PROD.	.000072	.000204	.000059	.000148	.000139	.000184	.000137	.0008151	.000045	.000531
MEAT AN. & PROD.	.000085	.000269	.000072	.000236	.000076	.000175	.000191	.010979	.000041	.001293
FOOD, FEED GR.	.000023	.000040	.000028	.000051	.000043	.000034	.000048	.000964	.000011	.004801
OTHER CROPS	.000034	.000040	.000016	.000032	.000133	.000112	.000032	.000578	.000017	.000204
FOREST, FISH, PROD.	.000023	.000033	.000012	.000038	.000015	.000033	.000065	.000962	.000017	.000033
AGR. FOR. FISH, SERV.	.000774	.000497	.000525	.000258	.004533	.001458	.000426	.001041	.000297	.007026
IRON & FERRO. ORES	.000127	.000033	.000022	.000024	.000069	.000168	.000121	.000051	.000500	.000040
NONFERROUS ORES	.000063	.000020	.000014	.000024	.000027	.000102	.000108	.000033	.000290	.000034
COAL & HEAT MINING	.000175	.000031	.000079	.000045	.000022	.000102	.000029	.000056	.000038	.000037
OIL & NAT. GAS	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
STONE, CLAY MFG., QUAR.	.000345	.000045	.000047	.000047	.000208	.000127	.000089	.000038	.000152	.000074
OTHER MINING	0	0	0	0	0	0	0	0	0	0
HEAVY CONSTRUCTION	0	0	0	0	0	0	0	0	0	0
HAIR, A REP. CONSTR.	.003281	.005204	.004447	.007449	.059492	.018388	.007227	.007222	.009252	.015925
REPAIRANCE	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
MEAT PRODUCTS	.000040	.003134	.000024	.002852	.000496	.001962	.002752	.134563	.000722	.003500
DAIRY PRODUCTS	.000206	.000714	.000184	.000643	.000111	.000948	.000501	.033342	.000158	.000779
CANNED, FROZ. PRES.	.000140	.000407	.000122	.000421	.000074	.000184	.000335	.021977	.000110	.000514
GRAIN MILL, PROD.	.000028	.000068	.000025	.000067	.000035	.000053	.000070	.002716	.000017	.000201
BAKERY PROD.	.000145	.000545	.000130	.000452	.000078	.000424	.000353	.023577	.000113	.000444
ALCH. BEV., SOFT DR.	.000053	.000242	.000047	.000163	.000028	.000071	.000128	.008604	.000043	.000209
MISC. FOOD, TOR.	.000144	.000527	.000127	.000441	.000076	.000194	.000342	.022811	.000112	.000537
TEXTILE GOODS	.000198	.000176	.000168	.000177	.000147	.000193	.000419	.000160	.000271	.000942
APPAREL, FASH. TEX.	.000003	.001227	.000257	.001224	.000163	.013194	.000622	.000882	.001507	.001334
LOGGING	.000436	.000279	.000170	.000494	.000267	.000589	.001301	.000150	.000177	.000102
SAWMILLS	.000454	.000287	.000108	.000199	.000415	.000936	.000435	.000121	.000243	.000191
OTHER WOOD PROD.	.001046	.000527	.000134	.000142	.000677	.001477	.000498	.000240	.000427	.000300
FURNITURE	.000009	.000007	.000001	.000002	.000006	.000009	.000007	.000002	.000000	.000000
PULP & PAPER PROD.	.000045	.002680	.001741	.006133	.000495	.002681	.015645	.001326	.000788	.001393
PAPERBOARD CONT.	.000131	.001023	.000497	.000185	.000104	.001144	.000548	.004007	.000302	.000242
PRINTING, A PUBL.	.001127	.000583	.000382	.024876	.001817	.007507	.098859	.004517	.002853	.007477
CHEM. & ALLIED PROD.	.006381	.001044	.000047	.001551	.001942	.003673	.011283	.001660	.002602	.004819
METAL. REF. & PROD.	.037759	.022443	.016418	.008533	.012419	.030404	.014024	.006772	.026827	.009499
RUBBER PROD.	.000441	.000004	.000031	.000288	.000472	.002305	.000980	.000974	.007394	.000360
LEATHER PROD.	.000000	.000000	.000000	.000000	.000000	.000110	.000000	.000012	.000028	.000129
GLASS, STONE, CLAY	.003227	.000445	.000411	.000380	.001966	.003222	.000876	.000417	.000497	.000644
PRIMARY METALS	.002151	.000547	.000387	.000447	.001180	.002923	.002087	.000912	.000954	.000681
IRON & STEEL FOUND.	.000177	.000009	.000000	.000001	.000003	.000227	.000198	.000094	.001079	.000044
PRIMARY COPPER	.000053	.000017	.000011	.000016	.000025	.000104	.000073	.000028	.000237	.000024
OTHER PRIM. MET.	.000373	.000172	.000106	.000184	.000164	.001015	.000797	.000337	.001240	.000249
FABRICATED METALS	.001839	.000085	.000075	.000046	.000087	.004461	.002611	.002078	.025122	.000622
FARM MACHINERY	.000195	.000152	.000059	.000078	.000231	.000092	.001654	.000161	.000113	.000148
MACHINE SHOPS	.000000	.000238	.000076	.000044	.000039	.000574	.000527	.000104	.002752	.000048
OTHER MAN. ELECTR.	.001701	.000250	.000108	.000175	.000175	.000644	.000621	.000324	.000088	.000274
COMP. OFF. MACH.	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
SERV. IND. MACH.	.000455	.000377	.000181	.000095	.000400	.000851	.000224	.000110	.010108	.000334
ELECTRICAL MACH.	.001700	.000300	.000250	.000300	.000400	.000600	.001611	.000191	.005735	.000451
MOTOR VEHICLES	.000128	.000325	.000118	.000077	.000050	.000223	.000185	.000053	.017500	.000085
OTHER TRANS. EQUIP.	.000014	.000011	.000022	.000034	.000012	.000027	.000041	.000023	.000021	.000037
TOOL. & SCIENTIF.	.000020	.000050	.000013	.000018	.000012	.000040	.000049	.000027	.000022	.000044
OPTICAL, ORTH., PHOT.	.000068	.000107	.000052	.000181	.000031	.001158	.000018	.000047	.000045	.001328
MISC. INSTR.	.000419	.001004	.000435	.001578	.000559	.013451	.009354	.001104	.000544	.002641
RAILROAD TRANS.	.004377	.001014	.001091	.001344	.000480	.000240	.002878	.005734	.000500	.001588
LOCAL TRANSIT	.000125	.000000	.000125	.000433	.000078	.000297	.000212	.000155	.000177	.000330
TRUCK TRANS.	.005335	.000174	.001022	.001349	.001081	.002377	.002452	.005579	.002295	.001973
AIR TRANS.	.000181	.000946	.000284	.000703	.000160	.000523	.002527	.000298	.000411	.000526
OTHER TRANS.	.001034	.000687	.001491	.000384	.000293	.000984	.000557	.000760	.000424	.001223
COMMUNICATIONS	.006601	.013853	.000639	.016040	.002203	.009353	.058698	.004014	.005004	.010471
ELECTRIC UTILITIES	.000732	.011193	.029140	.013574	.007331	.033203	.007130	.020857	.009554	.013679
GAS UTILITIES	.008426	.002930	.000641	.003470	.002837	.011922	.003115	.004654	.004783	.005644
WATER & SANIT. SERV.	.000276	.000245	.001700	.003087	.001493	.005424	.002140	.004294	.001588	.002509
WHOLESALE TRADE	.000081	.001763	.000674	.000617	.000661	.001940	.010904	.005681	.000593	.013549
RETAIL TRADE	.000146	.000427	.000273	.000207	.003390	.004288	.001930	.000933	.017024	.000290
FINANCE, INS.	.007328	.010424	.011679	.032540	.014154	.015325	.012811	.009438	.007422	.011570
REAL ESTATE	.000376	.017857	.003035	.023978	.004704	.053091	.029231	.028238	.027245	.044127
HOTELS, REPS., REP.	.001726	.000200	.001076	.004744	.003118	.026605	.012888	.010184	.002121	.008659
BUSINESS SERV.	.001100	.033014	.026720	.041010	.010371	.027243	.040092	.017659	.013734	.028277
EAT, DRINK, PLACES	.000191	.021172	.005444	.018805	.003245	.008056	.014643	.020444	.004658	.023152
Automobile REPAIR	.004707	.015355	.005703	.007601	.002254	.010136	.004038	.002315	.001372	.004031
RECREATION	.000288	.000571	.000284	.000715	.000111	.000352	.002853	.004612	.000102	.005070
HEALTH SERVICES	.000132	.000019	.000020	.001573	.000038	.000027	.000021	.000130	.000014	.000072
EDUC. INSTR.	.000406	.000009	.001092	.005447	.000455	.002532	.003074	.002600	.000038	.003332
FED. GOVT. ENTER.	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
STATE & LOCAL ENTER.	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
SWAP, USED & RECOND.	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000	.000000
SUB-TOTAL	1.747370	1.217341	1.215233	1.742505	1.208201	1.373774	1.412858	1.449087	1.282287	1.313300

DIRECT AND INDIRECT EFFECTS OF \$1 INCREASE
IN FINAL PURCHASES FOR SPECIFIED INDUSTRY OUTPUT
(continued)

INDUSTRY	NAFES	71	72	73	74	75
(DOLLARS)						
DAIRY & POULTRY PROD.		.001352	.000422	.000027	.000127	.000030
MEAT AN. & PROD.		.000074	.000519	.000039	.000174	.000047
FOOD, FEED GR.		.000116	.000084	.000045	.000035	.000012
OTHER FOODS		.000077	.000059	.000104	.000073	.000015
FOREST., FISH, PROD.		.000042	.000051	.000007	.000043	.000050
AGR., FOR., FISH, SERV		.000720	.001797	.000111	.001709	.000172
IRON & FERR. ORES		.000044	.000042	.000026	.000264	.013564
NONFERROUS ORES		.000042	.000044	.000016	.000120	.005336
COAL & HEAT MINING		.000043	.000104	.000209	.000093	.000267
OIL & NAT. GAS		.000000	.000000	.000000	.000000	.000000
STONE, CLAY, BRICK, GLASS		.000044	.000116	.000035	.000044	.000248
OTHER MINING		0	0	0	0	0
NEW CONSTRUCTION		0	0	0	0	0
MATN. & REP. CONSTR.		.013549	.025154	.006697	.142475	.008731
MANUFACTURE		.000000	.000000	.000000	.000000	.000000
MEAT PRODUCTS		.010624	.005717	.000412	.001514	.000506
DAIRY PRODUCTS		.005179	.001401	.000084	.000377	.000047
CANNED, FROZ., PRES.		.002270	.000731	.000062	.000272	.000074
GRAIN MILL., PROD.		.000313	.000141	.000274	.000049	.000020
BAKERY PROD.		.001475	.001787	.000043	.000274	.000069
ALCH. BEV., SOFT DR.		.000474	.000277	.000023	.000047	.000026
MISC. FOOD, TOR.		.002375	.000434	.000077	.000274	.000081
TEXTILE GOODS		.000309	.000144	.000219	.000349	.001335
APPAREL, FASH. TEX.		.005456	.000731	.001716	.001367	.015505
LOGGING		.000174	.000441	.000119	.000054	.001157
SAWMILLS		.000182	.000370	.000078	.001274	.001118
OTHER WOOD PROD.		.000398	.000017	.000107	.002076	.002113
FURNITURE		.000003	.000005	.000001	.000019	.000020
PULP & PAPER PROD.		.001140	.004404	.001175	.001222	.009572
PAPER, PAPER CONT.		.000473	.000403	.000133	.000226	.015942
PRINTING & PUBL.		.005210	.024919	.004571	.006129	.051268
CHEM. & ALLIED PROD.		.003764	.007171	.000450	.017540	.012379
PETR. REF. & PROD.		.012222	.010944	.010404	.040747	.024201
RUBBER PROD.		.002220	.000407	.000272	.000613	.002406
LEATHER PROD.		.000044	.000030	.000032	.000017	.000278
GLASS, STONE, CLAY		.000573	.001014	.000727	.004227	.002311
PRIMARY FE/STEELS		.000744	.001439	.000459	.006111	.251050
IRON & STEEL FOUND.		.000041	.000041	.000120	.000354	.014360
PRIMARY COPPER		.000029	.000034	.000014	.000045	.0004374
OTHER PRIM. MET.		.000360	.000354	.000147	.000449	.064337
FABRICATED METALS		.001056	.001745	.000777	.003444	.100035
FARM MACHINERY		.000059	.000074	.000027	.000043	.005605
MACHINE SHOPS		.000044	.000034	.000029	.000173	.002643
OTHER NON. ELECTR.		.000235	.000421	.000230	.003442	.015002
COMP., OFF. MACH.		.000000	.000000	.000000	.000000	.000000
SERV. IND. MACH.		.000141	.000134	.000116	.001224	.004353
ELECTRICAL MACH.		.000309	.000625	.000145	.001643	.011440
MOTOR VEHICLES		.000041	.000102	.000130	.000114	.000926
OTHER TRANS. EQUIP.		.000027	.000027	.000014	.000025	.000290
PROP., SCIENT.		.000000	.000000	.000011	.000040	.001197
OPTICAL, INSTR., INSTR.		.001166	.000261	.000064	.000074	.001205
MISC. USE.		.002202	.005024	.000167	.001404	.002750
RAILROAD TRANS.		.000129	.001194	.012433	.002274	.004657
LOCAL TRANSIT		.000123	.000482	.000154	.000144	.000420
TRUCK TRANS.		.001094	.002345	.000604	.004444	.002327
AIR TRANS.		.001024	.000000	.004441	.000706	.000778
OTHER TRANS.		.000300	.000305	.003374	.001976	.001840
COMMUNICATIONS		.000149	.010175	.001725	.006304	.001796
ELECTRIC UTILITIES		.013720	.030502	.012702	.140364	.011742
GAS UTILITIES		.010704	.000443	.004711	.049114	.009917
WATER & SAN. SERV.		.000426	.000442	.001244	.000110	.001247
WHOLESALE TRADE		.011414	.000555	.000644	.015005	.015527
RETAIL TRADE		.001476	.003453	.000545	.010457	.000947
FINANCE, INC.		.000423	.005445	.005003	.005844	.003079
REAL ESTATE		.000149	.040599	.010451	.014045	.005494
HOTELS, RES., RES.		.011715	.000021	.001059	.002641	.001949
BUSINESS SERV.		.010015	.027424	.000750	.014404	.007100
EAT. DRINK. PLACES		.010111	.020433	.002442	.004444	.002809
AUTOMOBILE REPAIR		.001104	.002793	.003345	.003220	.001244
MOTION PIC. & RECR.		.000105	.002434	.000702	.000300	.000107
HEALTH SERVICES		.0022247	.000014	.000000	.000325	.000004
EDUC., RECRE.		.001044	.0007624	.000711	.000627	.000011
FED. GOVT. ENTER.		.000027	.021942	1.002704	.000007	.002127
STATE & LOCAL ENTER.		.001004	.005522	.001125	1.011517	.001712
REPAR. REPR. & SECUR.		.000047	.000073	.000024	.000117	1.004633
SUB-TOTAL		1.000047	1.367304	1.140077	1.666673	1.793271

DIRECT AND INDIRECT EFFECTS OF \$1 INCREASE
IN FINAL PURCHASES FOR SPECIFIED INDUSTRY OUTPUT
(continued)

INDUSTRY	NAME'S	71	72	73	74	75
(DOLLARS)						
1	DAIRY & POULTRY PROD.	.001352	.000422	.000627	.000127	.000030
2	MEAT AN. & PROD.	.000074	.000519	.000039	.000174	.000047
3	FOOD- FEED GR.	.000116	.000044	.000045	.000035	.000012
4	OTHER CROPS	.000077	.000059	.000104	.000073	.000015
5	FOREST.. FISH. PROD.	.000042	.000051	.000007	.000043	.000050
6	AGR..FOP..FISH. SEPV	.000720	.001797	.000111	.001709	.000172
7	IRON & FEER. PRES	.000044	.000042	.000026	.000244	.013564
8	NONFERROUS ORES	.000042	.000044	.000016	.000120	.005336
9	COAL & PEAT MINING	.000043	.000104	.000299	.000043	.000267
0	OIL & NAT. GAS	.000000	.000000	.000000	.000000	.000000
1	STONE, CLAY REG. MIN.	.000044	.000114	.000035	.000044	.000248
2	OTHER MINING	0	0	0	0	0
3	NEW CONSTRUCTION	0	0	0	0	0
4	MAIN. & REP. CONSTR.	.013549	.026154	.006497	.142475	.008731
5	OPPNANCE	.000000	.000000	.000000	.000000	.000000
6	MEAT PRODUCTS	.010424	.005717	.000412	.001514	.000506
7	DAIRY PRODUCTS	.005179	.001601	.000048	.000377	.000047
8	CANNED-FRZ.PRES.	.002270	.000734	.000042	.000272	.000074
9	GRAIN MILL. PROD.	.000333	.000141	.000274	.000042	.000020
0	BAKERY PROD.	.001475	.001747	.000043	.000274	.000049
1	ALCH. BEV.. SOFT DR.	.000474	.000277	.000073	.000047	.000026
2	MISC. FOOD. TOR.	.002535	.000434	.000077	.000274	.000081
3	TEXTILE GOODS	.000399	.000144	.000219	.000349	.001335
4	APPAREL, FASH. TFX.	.005456	.000731	.001716	.001347	.015505
5	LOGGING	.000174	.000441	.000119	.000044	.001157
6	SAWMILLS	.000182	.000370	.000078	.001276	.001118
7	OTHER WOOD PROD.	.000398	.000647	.000107	.002036	.002113
8	FURNITURE	.000003	.000005	.000001	.000019	.000020
9	PULP & PAPER PROD.	.001140	.004404	.001175	.001222	.009572
0	PAPERBOARD CONT.	.000473	.000403	.000133	.000226	.015942
1	PRINTING & PUBL.	.005210	.024419	.004571	.006126	.051268
2	CHEM. & ALLIED PROD.	.003766	.007171	.000040	.017540	.012379
3	PTFR. REF. & PROD.	.012222	.019444	.010444	.040747	.024201
4	RUBBER PROD.	.002240	.000407	.000272	.000413	.002406
5	LEATHER PROD.	.000044	.000030	.000032	.000017	.000278
6	GLASS, STONE, CLAY	.000573	.001014	.000327	.006227	.002311
7	PRIMARY FE/STEELS	.000744	.001434	.000459	.004111	.251056
8	IRON & STEEL FOUND.	.000041	.000041	.000120	.000354	.014360
9	PRIMARY COPPER	.000029	.000034	.000014	.000045	.004374
0	OTHER PRIM. MET.	.000366	.000344	.000147	.000449	.064337
1	FABRICATED METALS	.001956	.001744	.000777	.003444	.010035
2	FARM MACHINERY	.000059	.000074	.000027	.000043	.005605
3	MACHINE SHOPS	.000044	.000034	.000029	.000173	.002443
4	OTHER NON. ELECTR.	.000235	.000421	.000270	.003442	.015002
5	COMP.. OFF. MACH.	.000000	.000000	.000000	.000000	.000000
6	SERV. IND. MACH.	.000141	.000334	.000116	.001276	.004353
7	ELECTRICAL MACH.	.001399	.000644	.000143	.001443	.011440
8	MOTOR VEHICLES	.000041	.000342	.000130	.000114	.000926
9	OTHER TRANS. EQUIP.	.000027	.000027	.000014	.000025	.000270
0	PROF.. SCIENT.	.000000	.000000	.000011	.000040	.001197
1	OPTICAL, INSTR.. ENG	.001140	.000243	.000044	.000074	.001205
2	MISC. REG.	.002202	.000044	.000147	.001444	.002750
3	RAILROAD TRANS.	.001949	.001944	.012433	.002274	.044657
4	LOCAL TRANSIT	.000123	.000042	.000150	.000144	.000429
5	TRUCK TRANS.	.001944	.002344	.000048	.000044	.002327
6	AIR TRANS.	.001024	.000363	.000041	.000106	.000178
7	OTHER TRANS.	.000300	.000545	.003374	.001276	.001840
8	COMMUNICATIONS	.001044	.010174	.001725	.006304	.001796
9	ELECTRIC UTILITIES	.013720	.036502	.012702	.140368	.011762
0	GAS UTILITIES	.010704	.000447	.004711	.062114	.009917
1	WATER & SAN. SERV.	.004424	.00442	.001244	.000110	.001267
2	WHOLESALE TRADE	.011414	.000544	.002042	.015005	.015527
3	RETAIL TRADE	.001476	.003657	.000444	.010447	.000447
4	FINANCE, INS.	.000443	.005444	.005003	.000444	.003079
5	REAL ESTATE	.000444	.044444	.010451	.014045	.005449
6	HOTELS, RES.. SER.	.011735	.000421	.001049	.002441	.001949
7	BUSINESS SERV.	.000345	.027624	.000750	.010044	.007100
8	EAT. & DRINK. PLACES	.010411	.024444	.002442	.000444	.002806
9	AUTOMOBILE REPAIR	.001104	.002743	.003444	.003220	.001244
0	NOTION MFG. & REPR.	.000405	.002434	.000702	.000300	.000107
1	HEALTH SERVICES	.002267	.000014	.000000	.000325	.000004
2	EDUC.. HONOR.	.001044	.000764	.000311	.000627	.000411
3	FED. GOVT. ENTER.	.000227	.021442	.000204	.000447	.002127
4	STATE & LOCAL ENTER.	.001004	.005522	.001025	.011517	.001712
5	SCRAP, USED & SECOND	.000047	.000074	.000028	.000117	.000463
6	SUB-TOTAL	1.007647	1.467304	1.140077	1.646673	1.793271