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An Input Output Study for The Omaha SMSA

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AN INPUT OUTPUT STUDY FOR
THE OMAHA SMSA

J. D. Stolen

P. C. Chang

Omaha Urban Areas Research Project
The Center for Urban Affairs
Wayne Wheeler, Director
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University of Nebraska at Omaha
Omaha, Nebraska 68101
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the Lincoln Campuses of the University of Nebraska, and
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J. D. Stolen

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THE OMAHA STANDARD METROPOLITAN STATISTICAL

AREA: AN INPUT-OUTPUT STUDY

INTRODUCTION

Purpose of Study

This study is an extension and refinement of a previous report on the Omaha Standard Metropolitan Statistical Area (SMSA) by Perry P. Chang.¹ The present study makes three major changes in Chang's report, in that it obtains output and value added of industries in the Omaha area, exports and imports of the industries, certain income multipliers, forecasts of output in the Omaha area for 1975 and 1990, and compares the three results with Chang's.

The major change in the present case deals with local output by industry, which was obtained partially by a direct sampling of firms in the Omaha SMSA and partially by recourse to regional data, as opposed to interpolation from national figures in the provisional report. A detailed breakdown of the final demand sector in this study into personal consumption expenditures, federal government purchases, state and local government purchases, gross private fixed capital, other final demand, and regional exports is another important difference. An extension of the present study is that it gives output multipliers for all industries, whereas the former report looked specifically at only the Food and Kindred Products industry. Finally, both studies forecast the output of the Omaha SMSA for 1975 and 1990.

¹Perry P. Chang, An Input-Output Study for the Omaha SMSA, 1963: A Provisional Report, Omaha, Urban Studies Center, University of Nebraska at Omaha, 1968.

With the exceptions mentioned above, the two models are basically the same, both being based on the Leontiff input-output system, as explained in various sources.² Basically input-output analysis shows to whom industry sells its output, and from whom it obtains its inputs. On the one hand, the total demand or gross output of an industry comprises the output sold to other local industries (intermediate demand), the output sold to households, federal, state and local government, to business for final use (local final demand), and output sold to other regions (exports).³ On the other hand, the total supply or gross inputs for an industry constitutes the inputs from other industries in the region (intermediate supply), the inputs from primary sources (the factors of production), and inputs from other regions (imports).⁴

In order to better understand these concepts, Table I presents a hypothetical numerical example of an input-output table for an economy with three industries, agriculture, manufacturing and services. The table shows the supply (or inputs) for each industry vertically and the demand (or outputs) of each industry horizontally. For example, agriculture has obtained \$10 million of inputs from itself, \$25 million from manufacturing and \$15 million from services for a total intermediate supply of \$50 million.

²H. B. Cherry and P. G. Clark, Interindustry Economics (New York: John Wiley and Sons, Inc., 1962), and Chiou-Shuang Yan, Introduction to Input-Output Economics (New York: Holt, Rinehart and Winston, 1969).

³Total local demand = Intermediate demand plus local final demand.

⁴Total local supply = Intermediate supply plus value added.

TABLE I

HYPOTHETICAL INPUT-OUTPUT TABLE
(FIGURES IN MILLIONS OF DOLLARS)

| Output to Input from | Intermediate Demand | | | Total intermediate use | Local* final demand | Total local demand | Exports | Total demand |
|-------------------------|---------------------|---------------|----------|------------------------------|---------------------------|--------------------------|---------|-----------------|
| | Agriculture | Manufacturing | Services | | | | | |
| Agriculture | 10 | 20 | 5 | 35 | 65 | 100 | -- | 100 |
| Manufacturing | 25 | 25 | 15 | 65 | 45 | 110 | 5 | 115 |
| Services | 15 | 10 | 30 | 55 | 65 | 120 | 10 | 130 |
| Intermediate Supply | 50 | 55 | 50 | 155 | | | | |
| Value Added** | 40 | 60 | 80 | | | | | |
| Total Local Supply | 90 | 115 | 130 | | | | | |
| Imports | 10 | -- | -- | | | | | |
| Total Supply | 100 | 115 | 130 | | | | | 345 |

*Local final demand = Consumption plus Investment plus Government Expenditures.

**Value added = Wages plus Rent plus Interest plus Profits (and in this study Depreciation plus Indirect Business Taxes).

It also obtained \$40 million worth of primary inputs and \$10 million of imports for a total local supply and total supply of \$90 million and \$100 million worth of inputs respectively. Agriculture sold \$10 million worth of goods to itself, \$20 million worth to manufacturing, and \$5 million to services, for a total intermediate output of \$65 million. It also sold \$65 million worth for final use and exported none for a total local demand and total demand of \$100 million.

It should be noted that the above table also gives figures for gross national product (GNP) based on either the expenditures approach or the income approach. By the former method, $GNP = \text{consumption plus investment plus government spending plus net exports}$ which equals (in terms of the table) local final demand plus net exports, i. e., $65 + 45 + 65 + (15 - 10) = 180$. The latter method defines $GNP = \text{National Income} + \text{Indirect Business Taxes} + \text{depreciation}$, which equals (in terms of the table) value added, i. e., $40 + 60 + 80 = 180$.

In this study, exports are net exports; i. e., the excess of total local supply over total local demand, and imports are net imports; i. e., the excess of total local demand over total local supply. In addition, the value of the primary inputs is composed of wages, rent, interest, profit, depreciation, and indirect business taxes. Local final demand is made up of consumption, federal, state and local government purchases, gross private fixed capital formation, and other demand and regional exports. Finally, as in all input-output studies, total supply = total demand.

The basic tables of input-output analysis are the transactions table, which summarizes the inputs and outputs of all industries, and the total requirements table, which shows the total effects of a change in industry final demand on the total supply of the industry. In addition,

another table--the direct requirements table--is important in obtaining the total requirements table from the transactions table. The transactions table is used in obtaining output, value added, exports and imports of industries, while the total requirements table is employed in calculating output multipliers for the industries and both are applied in securing industry forecasts.

In order to derive the Omaha SMSA transactions table, certain steps had to be carried out. First, industries in Omaha had to be aggregated into a number large enough to give sufficient detail, yet small enough to ease the mathematical calculations involved. Therefore, the Omaha area was grouped into thirty industries based on the 1958 United States input-output study classification and on the Standard Industrial Classification (SIC).⁵ The thirty industries and their sources are given in Appendix A, which has been reproduced from Chang's study.

Next, the eighty-seven industries of the 1958 United States Transactions Table had to be reduced to the thirty Omaha industries which gave a "Reduced United States Transactions Table" (Appendix B).⁶ The "Direct Production Requirements Table" for Omaha (Appendix C) was obtained from the "Reduced United States Transactions Table" by dividing the different inputs of each industry by the total supply of the respective industries.⁷

⁵ National Economics Division Staff, "The Transactions Table of the 1958 Input-Output Study and Revised Direct and Total Requirements Data," Survey of Current Business, Vol. 45, No. 9, 1965, pp. 33ff; Fortune Marketing Division, "Fortune's 1966 Input-Output Coefficients," Fortune, 1967.

⁶ This table is also reproduced from the Chang study, Appendix B.

⁷ Appendix C is reproduced from the Chang study.

Two assumptions are implied by these calculations: that each industry has a linear homogeneous production function--inputs and outputs change in direct proportion to each other--and that the technology of the Omaha Area is assumed to be the same as the national average--the national relationships between inputs and outputs hold on the local level.⁸

The first major methodological difference between the preliminary report and the current study occurred with the next step, which was to obtain "control totals" for local production of the industries and for local final demand for the goods or services. The former report obtained local output of industries by interpolation from national figures, whereas the latter used both sample and regional data in the majority of the industries. As discussed below, sample data (found by means of a questionnaire) was used in nine industries, regional data (obtained from Census data and previous reports) was used in thirteen industries, and national data (acquired from Chang's report) was used in eight industries.

It was decided that before sample output data for an industry could be used, it would have to satisfy certain conditions: at least a 1/3 response from the firms in the industry, a composite sample of firm size in the industry, and finally, a qualitative evaluation as to the reliability of the data. If all these criteria were not satisfied, other sources were used. As a result, sample results were used for only 9 of the 30 industries.⁹ With the exception of the Utilities industry, the control totals (industry

⁸An attempt was made to obtain local values for the technical requirements, but inadequate questionnaire and interview results precluded this.

⁹The industries were: Apparel and Related Products, Food and Kindred Products, Paper and Allied Products, Chemicals and Allied Products, Fabricated Metal Products, Electrical Machinery, Transportation Equipment, Miscellaneous Manufacturing and Utilities.

outputs) were calculated by first finding the value of shipment per employee from the questionnaire and then multiplying the total Omaha SMSA employment for each industry classification by the value of shipment per employee, which gave total outputs for the industries. Since there were 100% returns from the sample for the Utilities industry, the figure from the sample was used as the total output.

Total output of Other Agricultural Products and the Livestock and Livestock Products industry was obtained from a publication of the Omaha Urban Areas Research Project.¹⁰ Census data for the Northwest Central Region yielded the control totals in eleven other industries.¹¹ It was felt that this data would be an improvement over the national figures, because it was obtained from the region in which Omaha is located. Again, the same basic methodology was used: for each industry the value of shipment/employee was obtained and then multiplied by industry employment to give the output of the industry. Finally, the remaining industry classification used the same output figures as in the Chang report.¹² In these cases sample data was not reliable and regional data was not available.

Local final demand was broken down into Personal Consumption Expenditures, Federal, State and Local Government Purchases, Gross Private Fixed

¹⁰ Harold J. Retallick and Charles R. Gildersleeve, Geographic Background Report No. 1, Omaha's Agricultural Core Region (Omaha: Urban Studies Center, University of Omaha, 1967).

¹¹ Lumber and Wood Products, Furniture and Fixtures, Printing and Publishing, Petroleum and Coal Products, Rubber and Plastics, Leather and Leather Goods, Stone, Clay and Glass Products, Primary Metals, Nonelectric Machinery, Instruments and Related Products.

¹² Mining, New Construction, Maintenance and Repair Construction, Retail and Wholesale Trade, Finance and Insurance, Real Estate and Rentals, Services, Undistributed.

Capital Formation, Other Final Demand and Regional Exports; and the Control totals were found for the sectors. Personal Consumption Expenditures for Omaha, for example, were estimated at 79.7% of Personal Income, this estimate being obtained from direct correspondence with the United State Department of Commerce. Personal Consumption Expenditures were allocated to the eighty-seven industry classifications of the 1958 United States input-output study and then aggregated to correspond to the thirty industry classifications of the study.

The Average Federal Purchases per employee was computed from the questionnaire, and then was multiplied by total federal employment in the area to give a "control total" for Federal Purchases. This total was then allocated to the various industries by the method used for personal consumption expenditures. Because State and Local Governments did not respond to the questionnaire, the Census of Governments, 1962, was used to obtain per capita local and state government expenditures. This figure was multiplied by the total population of the Omaha SMSA to give total state and local government expenditures which was then used to obtain expenditures per industry.

An estimate of Gross Private Fixed Capital Formation was computed indirectly from the Input-Output Study of Nebraska done by the University of Nebraska.¹³ The values for each Omaha industry were obtained by multiplying the ratio of Omaha employment to total state employment by the value of Gross Private Fixed Capital Formation for Nebraska and allocating

¹³T. W. Roester, et. al., The Economic Impact of Irrigated Agriculture on the Economy of Nebraska (Lincoln: Bureau of Business Research, University of Nebraska, 1968).

this figure among Omaha industries. Other final demand--exports to foreign countries--was obtained from the 1958 United States Input-Output Study which gave the "other final demand per industry." This figure was multiplied by the percent of United States employment in the Omaha SMSA to obtain exports of the Omaha area. Finally, regional exports, which were a balancing item, were found by comparing total demand and total supply. If total demand was greater than total supply, there were net imports and a balancing figure was added to the respective column while, if total supply was greater than total demand, there were net exports and a balancing figure was added to the respective row.

When the industry control totals were multiplied by the corresponding input coefficients of the Direct Requirements Table (Appendix C) and the final demand figures (as discussed above) were appended to this table, the transactions table for the Omaha SMSA (Appendix D) was obtained. As stated above, this was one of the two major tables from which results of the study were calculated. Appendix C was then modified--to show the different inputs of the industries, including net imports, as a ratio of total supply--by dividing the original ratios by $1 + m_j$ where m_j is the import ratio of the said industry. The primary reason for this calculation (Appendix E) was to obtain Appendix F--Total Requirements Table--Omaha SMSA. It was found by an inversion process (a matrix manipulation) involving Appendix E. The Total Requirements Table, the second of the major tables, shows the total effect of a change in final demand on the total supply of the respective industries.

Thus far, this study has indicated the basic similarities and differences with the Chang study. It has also explained briefly the basic

input-output model used in the study, and indicated the derivation of the two basic tables for the study. To obtain the transactions table for the Omaha SMSA, the industries had to be classified, from which a reduced United States Transactions Table and Direct Requirements Table were found. Then, after calculating control totals for industry output and final demand, the Omaha Transactions Table (Appendix D) was attained. The direct requirements table for the United States yielded a direct requirements table for Omaha (when imports were included) which, when inverted, gave the Total Requirements Table for Omaha (Appendix F), the second major table of the study.

BASIC FINDINGS

In this section the basic findings of the study are presented and compared to the findings of the provisional report. This takes the form of looking first at the output, value added and exports and imports of the industries as embodied in the transactions table, then at the income and employment multipliers as obtained from the total requirements table and finally at forecasts of output for the Omaha area for 1975 and 1990, calculated from both tables.

Transactions Table

Table II, obtained from the transactions table, shows total output for each industry, as well as for the area as a whole. It indicates that the output of Food and Kindred Products, Retail and Wholesale Trade, Finance and Insurance, and Services comprised almost 60% of the \$3.5

TABLE II
RELATIVE IMPORTANCE OF THE INDUSTRIES IN THE
OMAHA SMSA, 1963, ACCORDING TO OUTPUT

| <u>Rank</u> | <u>Industries</u> | <u>Output (\$1,000)</u> | <u>Output as % of Total Production</u> |
|-------------|-------------------------------------|-----------------------------|--|
| 1 | Food and Kindred Products | 865,298 | 24.48 |
| 2 | Retail and Wholesale Trade | 470,247 | 13.30 |
| 3 | Finance and Insurance | 387,167 | 10.95 |
| 4 | Services | 356,023 | 10.07 |
| 5 | Real Estate and Rentals | 231,958 | 6.56 |
| 6 | New Construction | 172,048 | 4.87 |
| 7 | Undistributed | 161,276 | 4.56 |
| 8 | Transportation and Warehousing | 147,550 | 4.17 |
| 9 | Electric Machinery | 135,861 | 3.84 |
| 10 | Utilities | 107,517 | 3.04 |
| 11 | Livestock and Livestock Products | 97,760 | 2.77 |
| 12 | Maintenance and Repair Construction | 57,348 | 1.62 |
| 13 | Fabricated Metal Products | 43,516 | 1.23 |
| 14 | Chemicals and Allied Products | 42,140 | 1.19 |
| 15 | Nonelectric Machinery | 41,388 | 1.17 |
| 16 | Printing and Publishing | 37,426 | 1.06 |
| 17 | Primary Metals | 24,551 | .69 |
| 18 | Paper and Allied Products | 23,636 | .67 |
| 19 | Transportation Equipment | 23,526 | .65 |
| 20 | Miscellaneous Manufacturing | 22,539 | .64 |
| 21 | Stone, Clay and Glass Products | 16,349 | .46 |
| 22 | Other Agricultural Products | 15,513 | .44 |
| 23 | Furniture and Fixtures | 15,407 | .44 |
| 24 | Petroleum and Coal Products | 10,536 | .30 |
| 25 | Apparel and Related Products | 9,120 | .26 |
| 26 | Rubber and Plastics | 8,385 | .24 |
| 27 | Lumber and Wood Products | 5,493 | .16 |
| 28 | Mining | 3,420 | .10 |
| 29 | Instruments and Related Products | 1,102 | .03 |
| 30 | Leather and Leather Goods | 1,014 | .03 |
| | Total | 3,535,114 | 99.99* |

*.01 error due to rounding

billion output of the Omaha area in 1963; while the top ten industries (excepting Real Estate and Rentals, and Undistributed) accounted for almost three-fourths of Omaha's total output.¹⁴ The fact that manufacturing industries--other than Food and Kindred Products--provided only 13% of the total output implies that the Omaha area has not developed a strong manufacturing base.¹⁵

Thus, the conclusion that Omaha is basically a Food Processing, Trade, Insurance and Service Center with an otherwise weak manufacturing base is similar to that of Chang's study. Even though this general conclusion is the same, there are some specific divergencies that occurred in particular industries. First, Food and Kindred Products output amounted to \$865 million in this study as opposed to \$629 million in Chang's study (Table III). In the latter study, total output of the industry was found by multiplying United States average value of shipment per employee with the corresponding employment level for the Omaha SMSA in 1963, while output of the former was found by multiplying average value of shipment per employee (obtained from a sample of Omaha firms) with the corresponding employment level for the Omaha SMSA in 1963. The higher output in this study is thus due to the higher average value of shipment per employee

¹⁴ Real Estate and Rentals, and Undistributed were excluded from the above industries because their value is artificially inflated--the former because of the inclusion of imputed rents of owner occupied farm and non-farm homes--the latter because it is really a catchall for all industries not included in the other twenty-nine.

¹⁵ These industries included: Apparel and Related Products, Lumber and Wood Products, Furniture and Fixtures, Paper and Allied Products, Printing and Publishing, Chemicals and Allied Products, Petroleum and Coal Products, Rubber and Plastics, Leather and Leather Goods, Stone, Clay and Glass Products, Primary Metals, Fabricated Metals, Nonelectric Machinery, Electric Machinery, Transportation Equipment, Instruments and Related Products, Miscellaneous Manufacturing.

TABLE III

RELATIVE IMPORTANCE OF THE INDUSTRIES IN THE
OMAHA SMSA, 1963, ACCORDING TO OUTPUT

| <u>Rank</u> | <u>Industries</u> | <u>Output (\$1,000)</u> | <u>Output as % of Total Production</u> |
|-------------|-----------------------------------|-----------------------------|--|
| 1 | Food & Kindred Products | 629,208 | 19.13 |
| 2 | Retail & Wholesale Trade | 470,247 | 14.30 |
| 3 | Finance & Insurance | 387,169 | 11.77 |
| 4 | Services | 356,020 | 10.83 |
| 5 | Real Estate & Rentals | 231,959 | 7.05 |
| 6 | New Construction | 172,048 | 5.23 |
| 7 | Undistributed | 161,278 | 5.09 |
| 8 | Utilities | 133,991 | 4.07 |
| 9 | Transportation & Warehousing | 112,924 | 3.43 |
| 10 | Livestock & Livestock Products | 94,445 | 2.87 |
| 11 | Electric Machinery | 88,288 | 2.69 |
| 12 | Chemical & Allied Products | 58,161 | 1.77 |
| 13 | Maintenance & Repair Construction | 57,350 | 1.74 |
| 14 | Printing & Publishing | 45,139 | 1.37 |
| 15 | Fabricated Metal Products | 39,582 | 1.20 |
| 16 | Transportation Equipment | 38,355 | 1.17 |
| 17 | Non-electric Machinery | 37,846 | 1.15 |
| 18 | Primary Metals | 36,143 | 1.10 |
| 19 | Paper & Allied Products | 28,658 | 0.87 |
| 20 | Miscellaneous Manufacturing | 24,330 | 0.74 |
| 21 | Other Agricultural Products | 18,835 | 0.57 |
| 22 | Stone, Clay & Glass Products | 14,776 | 0.45 |
| 23 | Furniture & Fixtures | 14,063 | 0.43 |
| 24 | Apparel & Related Products | 9,728 | 0.30 |
| 25 | Petroleum & Coal Products | 9,614 | 0.29 |
| 26 | Rubber & Plastics | 7,030 | 0.21 |
| 27 | Lumber & Wood Products | 5,718 | 0.17 |
| 28 | Mining | 3,417 | 0.10 |
| 29 | Instruments & Related Products | 1,182 | 0.03 |
| 30 | Leather & Leather Goods | 1,003 | 0.03 |
| | Total | 3,288,418 | 100.00 |

found in the sample, which may result from a higher level of technology in the industry locally, than in the economy as a whole.

Another difference of output in the studies arose in the Electrical Machinery industry, where the present study found output to be \$135 million compared to \$88 million in the Chang study. Since the value of output in the present study was obtained from sample returns comprising 98% of the industry, it was felt to be more indicative of local output. Sample returns of over 50% in the cases of Paper and Allied Products, Transportation Equipment, and Chemical and Allied Products gave credence to the output results of the present study, in spite of substantial differences when compared to Chang's study where the U. S. average value of shipment per employee was used.

Differences in output for Printing and Publishing, Stone, Clay and Glass Products, and Primary Metals occurred because the present study made use of census data for the Northwest Central Region as contrasted to census data for the entire economy in the Chang study. It was felt that the geographically more specific data yielded more accurate results than the corresponding data for the nation as a whole.

In Chang's study the value of Other Agricultural Products yielded output of \$9.3 million as opposed to \$7.6 million in the present study. In this case, the difference is essentially definitional. In Chang's report, Other Agricultural Products included Forestry and Fishery Products, and Agricultural, Forestry and Fishery Services, while in the present work it included only Value of All Crops Sold. Finally, a definitional difference is also the reason for the discrepancies in the Utilities and Transportation and Warehousing industries. In the former industry, Chang's

report indicated output of \$133 million, compared to the present study's \$107 million; the Transportation and Warehousing industry had an output of \$112.9 million in Chang's study compared to \$147.5 million in the present one. The difference can be explained by the inclusion of the Communications industry in the Utilities industry in Chang's study and in the Transportation and Warehousing industry in this study.¹⁶

Table IV yields more results reproduced from the Transactions Table (Appendix D)--total value added of the Omaha area and value added by industries. As mentioned above, total value added gives an estimate of total Gross National Product for the area, and the value added by each industry gives the contribution toward that Gross National Product by the respective industries. From the table, the top four industries--Retail and Wholesale Trade, Food and Kindred Products, Finance and Insurance and Services--yielded better than 55% of the Area's Value Added, while the top ten--excluding Real Estate and Rentals and Undistributed--contributed better than 70%. With the exception of Food and Kindred Products, Manufacturing's share was only 10.9%.¹⁷

These results generally agree with Chang's (Table V), where the top four industries accounted for almost 55%; the top ten industries, excluding Real Estate Rentals and Undistributed, determined 69% and manufacturing (other than Food and Kindred Products) accounted for 11.7% of total value added. In both studies the ranking of industries according to value added

¹⁶These definitional changes were necessary to maintain consistency with the previously established coefficients and industry classifications.

¹⁷See footnote 15.

TABLE IV
 RELATIVE IMPORTANCE OF THE INDUSTRIES IN THE
 OMAHA SMSA, 1963, ACCORDING TO VALUE-ADDED

| <u>Rank</u> | <u>Industries</u> | <u>Value-Added (\$1,000)</u> | <u>Value-Added as Per Cent of Total</u> |
|-------------|-------------------------------------|----------------------------------|---|
| 1 | Retail and Wholesale Trade | 340,683 | 19.60 |
| 2 | Food and Kindred Products | 220,813 | 12.70 |
| 3 | Finance and Insurance | 216,866 | 12.48 |
| 4 | Services | 187,964 | 10.81 |
| 5 | Real Estate and Rentals | 167,859 | 9.66 |
| 6 | Undistributed | 124,455 | 7.16 |
| 7 | Transportation and Warehousing | 96,495 | 5.55 |
| 8 | Electric Machinery | 61,221 | 3.52 |
| 9 | New Construction | 61,067 | 3.51 |
| 10 | Utilities | 52,532 | 3.02 |
| 11 | Maintenance and Repair Construction | 35,121 | 2.02 |
| 12 | Livestock and Livestock Products | 35,513 | 1.93 |
| 13 | Nonelectric Machinery | 18,374 | 1.06 |
| 14 | Printing and Publishing | 17,672 | 1.02 |
| 15 | Fabricated Metal Products | 17,566 | 1.01 |
| 16 | Chemicals and Allied Products | 16,610 | .95 |
| 17 | Primary Metals | 8,749 | .50 |
| 18 | Paper and Allied Products | 8,386 | .48 |
| 19 | Transportation Equipment | 8,379 | .48 |
| 20 | Stone, Clay and Glass Products | 8,156 | .47 |
| 21 | Miscellaneous Manufacturing | 7,697 | .44 |
| 22 | Other Agricultural Products | 7,684 | .44 |
| 23 | Furniture and Fixtures | 6,555 | .38 |
| 24 | Rubber and Plastics | 3,621 | .21 |
| 25 | Apparel and Related Products | 3,323 | .19 |
| 26 | Petroleum and Coal Products | 2,112 | .12 |
| 27 | Mining | 1,941 | .11 |
| 28 | Lumber and Wood Products | 1,780 | .10 |
| 29 | Instruments and Related Products | 573 | .03 |
| 30 | Leather and Leather Goods | 416 | .02 |
| | Total | 1,738,143 | 99.97* |

*.03 error due to rounding

TABLE V
RELATIVE IMPORTANCE OF THE INDUSTRIES IN THE
OMAHA SMSA, 1963, ACCORDING TO VALUE-ADDED

| <u>Rank</u> | <u>Industries</u> | <u>Value-Added (\$1,000)</u> | <u>Value-Added as Per Cent of Total</u> |
|-------------|-----------------------------------|----------------------------------|---|
| 1 | Retail & Wholesale Trade | 340,683 | 20.47 |
| 2 | Finance & Insurance | 216,886 | 13.03 |
| 3 | Services | 187,964 | 11.30 |
| 4 | Real Estate & Rentals | 167,859 | 10.09 |
| 5 | Food & Kindred Products | 160,566 | 9.65 |
| 6 | Undistributed | 124,455 | 7.48 |
| 7 | Transportation & Warehousing | 73,850 | 4.44 |
| 8 | Utilities | 65,467 | 3.93 |
| 9 | New Construction | 61,067 | 3.67 |
| 10 | Electric Machinery | 39,782 | 2.39 |
| 11 | Maintenance & Repair Construction | 35,121 | 2.11 |
| 12 | Livestock & Livestock Products | 32,377 | 1.95 |
| 13 | Chemicals & Allied Products | 22,926 | 1.38 |
| 14 | Printing & Publishing | 21,315 | 1.28 |
| 15 | Non-electric Machinery | 16,802 | 1.01 |
| 16 | Fabricated Metal Products | 15,969 | 0.96 |
| 17 | Transportation Equipment | 13,660 | 0.82 |
| 18 | Primary Metals | 12,880 | 0.77 |
| 19 | Paper & Allied Products | 10,166 | 0.61 |
| 20 | Other Agricultural Products | 9,331 | 0.56 |
| 21 | Miscellaneous Manufacturing | 8,310 | 0.50 |
| 22 | Stone, Clay & Glass Products | 7,372 | 0.44 |
| 23 | Furniture & Fixtures | 5,984 | 0.34 |
| 24 | Apparel & Related Products | 3,545 | 0.21 |
| 25 | Rubber & Plastics | 3,036 | 0.18 |
| 26 | Mining | 1,941 | 0.12 |
| 27 | Petroleum & Coal Products | 1,927 | 0.12 |
| 28 | Lumber & Wood Products | 1,852 | 0.11 |
| 29 | Instrument & Related Products | 561 | 0.03 |
| 20 | Leather & Leather Goods | 412 | 0.02 |
| | Total | 1,664,070 | 100.00 |

was similar to that of output with the exception of the Food and Kindred Products, and Retail and Wholesale Trade. The former accounted for 24.5% of output and only 12.7% of value added, while the latter accounted for 13.3% of output but 19.6% of value added in the present report. In Chang's study, output in the Food and Kindred Products industry was 19.1% of output and only 9.7% of value added, while the Retail and Wholesale Trade accounted for 14.3% of output, but 20.5% of value added.

The Transactions Table also provides figures on net exports and net imports for the area (Table VI). The figures show net exports--totaling \$1.04 billion--for seven of the thirty industries and net imports--totaling \$865 million--for twenty-three of the thirty industries, leaving a net export surplus of \$177 million for 1963. The largest exporter in that year was the Food and Kindred Products industry, followed by Finance and Insurance and Retail and Wholesale Trade. Food and Kindred Products exports amounted to 52.4%, while the three together had 86.2% of all the net exports. In addition, the weakness of the Omaha area's manufacturing base is evidenced by the 43.5% of net imports by this (other manufacturing) segment. These figures again emphasize the importance of Food Processing, Finance and Insurance and Retail and Wholesale Trade to the area.

The fact that since 1963 there has been an exodus of food processing firms from the Omaha area implies that the area is no longer enjoying an export surplus. As a result, an effort should be made to maintain and bolster the export surplus industries and improve import substitution, particularly where local demand is quite heavy (e. g., Miscellaneous Manufacturing, Apparel and Related Products and Nonelectric Machinery). This will be discussed in greater detail in the section entitled, "Prediction of the Omaha Area Output for 1975 and 1990."

TABLE VI

NET EXPORTS AND IMPORTS OF THE OMAHA SMSA, 1963

| Exports | | Imports | |
|--------------------------|--------------------|-----------------------------------|--------------------|
| Description | Value (\$1,000) | Description | Value (\$1,000) |
| Food & Kindred Products | 545,608 | Livestock & Livestock Products | 146,956 |
| Finance & Insurance | 229,680 | Other Agricultural Products | 109,008 |
| Retail & Wholesale Trade | 122,238 | Transportation Equipment | 94,659 |
| Electric Machinery | 58,785 | Undistributed | 83,294 |
| Services | 52,552 | Petroleum & Coal Products | 46,274 |
| Utilities | 26,440 | Miscellaneous Manufacturing | 44,815 |
| New Construction | 6,562 | Apparel & Related Products | 44,316 |
| | | Primary Metals | 34,448 |
| | | Fabricated Metal Products | 30,183 |
| | | Paper & Allied Products | 26,095 |
| | | Nonelectric Machinery | 24,802 |
| | | Transportation & Warehousing | 24,190 |
| | | Mining | 23,340 |
| | | Stone, Clay & Glass Products | 18,017 |
| | | Real Estate & Rentals | 18,011 |
| | | Rubber & Plastics Products | 17,853 |
| | | Printing & Publishing | 16,804 |
| | | Lumber & Wood Products | 15,387 |
| | | Instruments & Related Products | 15,603 |
| | | Chemicals and Allied Products | 14,728 |
| | | Leather & Leather Goods | 8,785 |
| | | Maintenance & Repair Construction | 6,029 |
| | | Furniture & Fixtures | 1,449 |
| | | Total Imports | 864,606 |
| | | Export Surplus | 177,259 |
| Total | 1,041,865 | | 1,041,865 |

The direct requirements table, Appendix E, was obtained next. Reading down the columns of this table, the figures indicate the dollar amounts of inputs necessary to produce \$1 worth of output. For example, the elements in the Livestock and Livestock Products column (in the Transactions Table), when divided by the total supply of livestock and livestock products, indicate that in order to produce one dollar's worth of output, the industry must purchase 33¢ worth of intermediate inputs from within the industries; 18¢ worth of primary inputs such as land, labor and capital and import 49¢ worth of inputs from outside the Omaha SMSA.

Total Requirements Table

In order to estimate the total effects resulting from the buying and selling activities of different industries in the area, recourse is made to the following type of reasoning:

$$\text{Total Output} - \text{Output for Intermediate Use} = \text{Output for Final Use}$$

$$T \quad - \quad I \quad = \quad F$$

where T, I and F are 30 x 1 column vectors representing the 30 industries. In addition, $I = A \cdot T$ where A is the 30 x 30 matrix of interindustry transactions in the direct requirements table (Appendix E) above. Therefore, $T - A \cdot T = F$ and $(I - A)T = F$ where I is a 30 x 30 identity matrix. Thus, $(I - A)^{-1}F = T$ and $(I - A)^{-1}$ shows the direct and indirect requirements per dollar of final demand. In other words, the total requirements table is obtained from the direct requirements table by subtracting the interindustry transactions matrix from an identity matrix and inverting the resulting matrix.

The Total Requirements Table (Appendix F) shows the direct and indirect requirements per dollar of final demand. Thus, the column headed Livestock and Livestock Products indicates the gross output from each of the industries required to produce one dollar of final demand in the output of livestock and livestock products. The other columns have a similar interpretation. In this study the total requirements table is used to obtain income multipliers for each industry, and predictions of Omaha's output in 1975 and 1990, at 3.5% and 4% growth rates of final demand for each year. Turning first to the income multipliers, their calculation will be discussed, their results will be presented, and their application will be studied within the context of the Armour closing.

Income Multipliers. The initial impact of a change in final demand on an industry is on the income of the industry; the idea being that as output falls, less is paid out in the form of wages, rent, interest and profit. A value for this can be computed by multiplying the change in demand by the value added coefficient. Thus, if there is a \$1 million change in final demand in the Livestock and Livestock Products industry, there will be a drop of \$136,950 in income originating in the industry. This direct income change--change in final demand multiplied by the value added coefficients--is shown for the 30 industries in column one of Table VII.

There is also a secondary impact on an industry which arises because the change in output of the industry will affect the output of the industry's suppliers and their supplier's suppliers. Thus, a change in output of a given industry will affect, and in turn be affected by, changes in output of other industries.

TABLE VII
INCOME INTERACTIONS IN THE OMAHA SMSA, 1963

| <u>Industry*</u> | <u>1</u> Direct Income Change | <u>2</u> Indirect Income Change | <u>3</u> Direct** and Indirect Income Change | <u>4</u> Simple** Multi- plier | <u>5</u> Direct,** Indirect and Induced Income Change | <u>6</u> Induced** Income Change | <u>7</u> Total** Multi- plier |
|------------------|--|--|---|---|--|---|--|
| 1 | .14 | .08 | .22 | 1.63 | .37 | .15 | 2.73 |
| 2 | .06 | .03 | .09 | 1.49 | .15 | .06 | 2.50 |
| 3 | .07 | .03 | .10 | 1.44 | .18 | .07 | 2.42 |
| 4 | .35 | .32 | .67 | 1.90 | 1.13 | .46 | 3.19 |
| 5 | .55 | .18 | .73 | 1.32 | 1.23 | .50 | 2.22 |
| 6 | .26 | .31 | .57 | 2.23 | .95 | .38 | 3.73 |
| 7 | .06 | .03 | .09 | 1.45 | .11 | .02 | 1.74 |
| 8 | .09 | .06 | .14 | 1.69 | .24 | .10 | 2.84 |
| 9 | .39 | .22 | .61 | 1.56 | 1.02 | .41 | 2.61 |
| 10 | .17 | .13 | .30 | 1.79 | .51 | .20 | 3.00 |
| 11 | .33 | .19 | .52 | 1.59 | .87 | .35 | 2.67 |
| 12 | .29 | .23 | .52 | 1.79 | .88 | .35 | 3.00 |
| 13 | .04 | .04 | .07 | 1.99 | .12 | .05 | 3.34 |
| 14 | .14 | .08 | .22 | 1.60 | .37 | .15 | 2.69 |
| 15 | .04 | .02 | .06 | 1.44 | .10 | .04 | 2.41 |
| 16 | .24 | .11 | .35 | 1.48 | .59 | .24 | 2.47 |
| 17 | .15 | .11 | .26 | 1.75 | .43 | .18 | 2.93 |
| 18 | .24 | .14 | .38 | 1.58 | .63 | .26 | 2.66 |
| 19 | .28 | .16 | .44 | 1.59 | .74 | .30 | 2.67 |
| 20 | .45 | .29 | .75 | 1.66 | 1.26 | .51 | 2.79 |
| 21 | .07 | .04 | .11 | 1.60 | .19 | .08 | 2.68 |
| 22 | .03 | .02 | .05 | 1.58 | .08 | .03 | 2.54 |
| 23 | .11 | .07 | .18 | 1.65 | .32 | .13 | 2.76 |
| 24 | .56 | .19 | .75 | 1.34 | 1.26 | .51 | 2.24 |
| 25 | .49 | .30 | .79 | 1.62 | 1.32 | .54 | 2.73 |
| 26 | .72 | .19 | .92 | 1.27 | 1.54 | .62 | 2.13 |
| 27 | .56 | .36 | .92 | 1.64 | 1.54 | .62 | 2.75 |
| 28 | .67 | .17 | .84 | 1.26 | 1.41 | .57 | 2.11 |
| 29 | .53 | .28 | .81 | 1.53 | 1.35 | .55 | 2.56 |
| 30 | .51 | .09 | .60 | 1.17 | 1.00 | .40 | 1.97 |

*For listing of industries, see Appendix A.

**Any errors are due to rounding.

The coefficients in a particular column of the total requirements table (Appendix F) show this direct plus indirect effect on the output of all other industries of a change in output of the particular industry. For example, the element in row 2, column 1, indicates that there would be a \$122,980 change in output of other agricultural products for a \$1 million change in output of livestock and livestock products. From this it follows that the direct plus indirect effects on income of a \$1 change in final demand for the particular industry is found by multiplying the various value added coefficients by their respective direct plus indirect effects on output and summing.

These direct and indirect effects on income due to a \$1 change in final demand are given in column three of Table VII. Column two gives the indirect effect--the direct and indirect effects minus the direct effect--and column four gives the simple income multiplier, the direct and indirect effect divided by the direct effect. This multiplier shows how much total income will change per unit change in income in the various industries; e. g., the Food and Kindred Products industry has a multiplier of 2.23, which indicates that if output in the industry changes by enough so that income changes by \$1 million this would result in a change in total Omaha income of \$2.23 million.

There is still a third and final impact on industries and the economy which must be considered. Thus far, the assumption has been made that the initial change in final demand leads to changes in output and income, but not to further changes in final demand. This, however, is an oversimplification, since, when a change in income occurs, it leads to a further change in some (or all, depending on the assumptions) components of final

demand. For example, as consumer income changes, one would expect a change in consumption to follow, and as business incomes change, one would expect a change in investment spending. For purposes of this study, the assumption is made that only consumption changes, i. e., investment and government expenditures are autonomous.

Thus, in addition to the direct and indirect changes in income discussed above, there are further induced changes resulting from changes in consumption, which lead to changes in output, which lead to changes in induced income, which lead to further changes in consumption, which lead to further changes in output and so on, round after round. There are two ways in which this information can be obtained: a direct method, used in this study, and an iterative procedure, used in the Chang study. In the former, the consumption and income relationships are directly integrated into the model by adding the consumption column and value added row to the intermediate use matrix. In effect, the consumer sector becomes another industry which supplies labor services and uses consumer goods as inputs.

This matrix corresponds to the intermediate transactions matrix discussed above, with the exception that now another row and column have been added. When it is subtracted from an identity matrix of the same order, and the result inverted, a matrix similar to the total requirements table above is obtained, with the exception that the matrix has an additional row and column. (This matrix has not been reproduced.) It has an interpretation similar to the Total Requirements Table discussed above. For example, the values in the first column indicate the output in each industry required per dollar of final demand for livestock and livestock products. The element in the household row--value added--of the column

indicates the direct, indirect and induced income effect of a dollar change in final demand.

This figure (element in the household row) is given in column five, Table VII, for the thirty industries. The induced effect--direct, indirect, and induced impact minus the direct and indirect impact, is given in column six and the total income multiplier, direct, indirect, and induced impact divided by the direct impact, is given in column seven. This multiplier gives the total change in income of the respective industries after all changes in output, income and consumption have occurred. For example, the Food and Kindred Products multiplier of 3.73 indicates that, for a dollar change in income in the Food and Kindred Products industry, there will be a \$3.73 change in income in the Omaha SMSA.

The analysis of multipliers in this study differed from the Chang study in two ways: the present study developed multipliers in all thirty industries, whereas the Chang study obtained them only for the Food and Kindred Products industry; this study calculated the total impact--direct plus indirect plus induced--and the total multiplier directly, whereas the Chang study computed the information from an iterative process. His method involved obtaining the initial change in demand which led to changes in output, which led to changes in income (the direct and indirect income effect), which in turn led to changes in consumption of the various industries' goods (based on a homogeneous consumption function), which led to changes in output, which led to changes in income (first round induced income change), which led to further changes in consumption, output and income, etc. Chang carried this procedure through three rounds, and the total induced effect was added to the direct and indirect effects; the

total multiplier was found by dividing this total impact by the direct impact.

Chang's purpose in carrying out these derivations was to obtain information pertaining to the closing of the Armour plant in Omaha. He found the direct income effect of the closing to be equal to Armour's output times the value added ratio for the Food and Kindred Products industry:

$$167,947,000 \times .25519 = 42,858,395$$

which is identical to the direct impact on income found in this study.

There is a slight discrepancy between the two studies with regard to the indirect and induced effects, and the simple and total multipliers. In the Chang study the direct and indirect impact is \$100,385,000; in this study it is \$95,437,000; the simple multiplier in the latter study was 2.23 and in the former 2.34. Finally, the total effect and total multipliers differed: in the Chang study the former was \$167,823,000, to \$159,996,000 in the present. The latter was 3.73 in this study and 3.91 in Chang's. Table VIII presents the relevant results for the two studies.

Table VIII

INCOME INTERACTIONS - FOOD AND KINDRED PRODUCTS

INDUSTRY - OUTPUT CHANGE EQUALS \$167,947,000

| | <u>Chang's Study</u> | <u>Present Study</u> |
|-------------------------------------|----------------------|----------------------|
| Direct Income Effect | \$ 42,858,000 | \$ 42,858,000 |
| Indirect Income Effect | 57,527,000 | 52,579,000 |
| Direct and Indirect Income Effect | 100,385,000 | 95,437,000 |
| Induced Effect | 67,438,000 | 64,559,000 |
| Direct, Indirect and Induced Effect | 167,823,000 | 159,996,000 |
| Simple Multiplier | 2.34 | 2.23 |
| Total Multiplier | 3.91 | 3.73 |

Predictions of the Omaha Area Output for 1975 and 1990. In order to predict Omaha's output for 1975 and 1990 certain heroic assumptions must be made. First, it is assumed that the final demand since 1963 of all the industries will increase uniformly at either 3.5% or 4%. These figures are based on recent growth of the United States economy and Omaha respectively. Second, it is assumed there will be no change in the technical coefficients over the time periods involved. Third, it is assumed that the import ratios of the industries will remain unchanged. These assumptions are admittedly oversimplifications of reality, but they will allow the arrival at certain conclusions about the area's future.

Predictions about Omaha's future output in this and Chang's study were derived in the same way. First, industry final demands for 1975 and 1990 were found by compounding the 1963 final demands at 3.5% and 4% per year. These compounded final demands were then multiplied by the total requirements ratios of each industry and summed to give the total supply of the industries. These total supply figures were then multiplied by $(1 - m_j)$, where m_j is the import ratio, to give the total local output of each industry. Finally, the change in total output was found by subtracting the total local outputs of the industries in 1963 from their respective total local outputs in 1975 and 1990. Tables IX and XI summarize these results for this study; Tables X and XII present similar data reproduced from Chang's study.¹⁸

With minor exceptions to be discussed below, both studies arrived at similar conclusions. Chang found that the total volume of business in

¹⁸Chang, op. cit., pp. 26-27.

TABLE IX. PROJECTED OUTPUT OF THE OMAHA SMSA, 1975 (\$1,000)

| Industry Number* | Final Demand | | Total Supply | | Total Local Output | | Increase in Output | | Rank of Increase | |
|---------------------|--------------|--------|--------------|---------|--------------------|---------|--------------------|---------|------------------|----|
| | 3½% | 4% | 3½% | 4% | 3½% | 4% | 3½% | 4% | 3½% | 4% |
| 1 | 12336 | 13071 | 287064 | 304156 | 114679 | 121507 | 16919 | 23747 | 15 | 14 |
| 2 | 27890 | 29550 | 154450 | 163645 | 19243 | 20389 | 3730 | 4876 | 26 | 25 |
| 3 | 4192 | 4441 | 39384 | 41728 | 5015 | 5313 | 1595 | 1893 | 28 | 28 |
| 4 | 259976 | 275454 | 259976 | 275454 | 259976 | 275454 | 87928 | 103406 | 6 | 6 |
| 5 | 23089 | 24464 | 92685 | 98203 | 83868 | 88862 | 26520 | 31514 | 11 | 12 |
| 6 | 808286 | 856408 | 999316 | 1058811 | 999316 | 1058811 | 134018 | 193513 | 4 | 4 |
| 7 | 70463 | 74658 | 79925 | 84684 | 13639 | 14454 | 4519 | 5334 | 24 | 24 |
| 8 | 1507 | 1596 | 30640 | 32464 | 8061 | 8541 | 2568 | 3048 | 27 | 27 |
| 9 | 19952 | 21140 | 25431 | 26946 | 23246 | 24632 | 7839 | 9225 | 21 | 21 |
| 10 | 6720 | 7120 | 67534 | 71555 | 32096 | 34007 | 8460 | 10371 | 20 | 20 |
| 11 | 15871 | 16816 | 79737 | 84484 | 55030 | 58307 | 17604 | 20881 | 14 | 16 |
| 12 | 34561 | 36625 | 82213 | 87108 | 60920 | 64547 | 18780 | 22401 | 13 | 15 |
| 13 | 44691 | 47352 | 83204 | 88158 | 15431 | 16350 | 4895 | 5814 | 23 | 23 |
| 14 | 11046 | 11704 | 38164 | 40437 | 12220 | 12948 | 3835 | 4563 | 25 | 26 |
| 15 | 13621 | 14432 | 14779 | 15659 | 1530 | 1621 | 516 | 607 | 30 | 30 |
| 16 | 2934 | 3109 | 48525 | 51414 | 23061 | 24459 | 6712 | 8110 | 22 | 22 |
| 17 | 5120 | 5424 | 86524 | 91674 | 36000 | 38149 | 11455 | 13589 | 18 | 18 |
| 18 | 11199 | 11865 | 101918 | 107985 | 60180 | 63762 | 16664 | 33844 | 16 | 11 |
| 19 | 61186 | 64829 | 99102 | 105003 | 61999 | 65691 | 20611 | 24303 | 12 | 13 |
| 20 | 143681 | 152236 | 204415 | 216481 | 204315 | 216481 | 68454 | 80620 | 8 | 8 |
| 21 | 138084 | 146306 | 177547 | 188118 | 35343 | 37447 | 11817 | 13921 | 17 | 17 |
| 22 | 12247 | 12976 | 24160 | 25598 | 1651 | 1749 | 549 | 647 | 29 | 29 |
| 23 | 64214 | 68037 | 96858 | 102625 | 32411 | 34341 | 9872 | 12449 | 19 | 19 |
| 24 | 93304 | 98859 | 242374 | 256804 | 208238 | 220636 | 60688 | 73086 | 9 | 9 |
| 25 | 91634 | 97099 | 159082 | 168553 | 159082 | 168553 | 51565 | 61036 | 10 | 10 |
| 26 | 552339 | 585212 | 692663 | 733900 | 692663 | 733900 | 222416 | 263653 | 1 | 1 |
| 27 | 414935 | 439639 | 581272 | 615880 | 581272 | 615880 | 194105 | 228713 | 2 | 2 |
| 28 | 237454 | 251529 | 373050 | 395260 | 346183 | 366793 | 114225 | 134835 | 5 | 5 |
| 29 | 326802 | 346258 | 524270 | 555483 | 524270 | 555483 | 168247 | 198460 | 3 | 3 |
| 30 | 170031 | 180155 | 350732 | 371615 | 231266 | 245035 | 69990 | 83759 | 7 | 7 |
| Total | | | 6096696 | 6459885 | 4902210 | 5494102 | 1367096 | 1367096 | | |

*For listing of industries, see Appendix A.

TABLE X. PROJECTED OUTPUT OF THE OMAHA SMSA, 1975 (\$1,000)

| Industry Number* | Final Demand | | Total Supply | | Total Local Output | | Increase in Output | | Rank of Increase | | Rate of Growth | |
|---------------------|--------------|--------|--------------|---------|-----------------------|---------|-----------------------|---------|---------------------|----|-------------------|------|
| | 3½% | 4% | 3½% | 4% | 3½% | 4% | 3½% | 4% | 3½% | 4% | 3½% | 4% |
| | 1 | 10445 | 11066 | 193327 | 204828 | 99157 | 105056 | 4712 | 10611 | 23 | 20 | .005 |
| 2 | 23375 | 24747 | 118371 | 125414 | 21709 | 23001 | 2874 | 4166 | 26 | 25 | .012 | .017 |
| 3 | 5445 | 5769 | 40253 | 42648 | 4498 | 4766 | 1081 | 1349 | 28 | 28 | .023 | .028 |
| 4 | 263273 | 278936 | 263273 | 278936 | 259986 | 275454 | 87938 | 103406 | 5 | 5 | .035 | .040 |
| 5 | 18523 | 19625 | 86200 | 91329 | 83595 | 88569 | 26245 | 31219 | 10 | 11 | .032 | .037 |
| 6 | 509610 | 539929 | 641149 | 679294 | 644149 | 679294 | 11941 | 50086 | 17 | 10 | .003 | .008 |
| 7 | 68375 | 72443 | 77295 | 81894 | 14543 | 15408 | 4815 | 5680 | 22 | 23 | .034 | .039 |
| 8 | 1535 | 1626 | 30236 | 32035 | 8468 | 8866 | 2650 | 3148 | 27 | 27 | .032 | .037 |
| 9 | 21157 | 22415 | 26052 | 27061 | 21219 | 22481 | 7156 | 8418 | 20 | 21 | .035 | .040 |
| 10 | 8209 | 8698 | 65477 | 69373 | 38450 | 40737 | 9792 | 12079 | 19 | 19 | .025 | .030 |
| 11 | 15449 | 16368 | 79935 | 84690 | 66330 | 70276 | 21191 | 25137 | 12 | 13 | .033 | .038 |
| 12 | 35296 | 37396 | 84790 | 89835 | 83763 | 88749 | 25604 | 30588 | 11 | 12 | .031 | .036 |
| 13 | 44272 | 46908 | 80818 | 85626 | 14054 | 14890 | 4440 | 5276 | 24 | 24 | .032 | .037 |
| 14 | 12610 | 13360 | 38162 | 40433 | 10222 | 10830 | 3192 | 3800 | 25 | 26 | .032 | .037 |
| 15 | 14878 | 15763 | 16012 | 16934 | 1513 | 1603 | 510 | 600 | 30 | 30 | .035 | .040 |
| 16 | 4709 | 4989 | 46194 | 48942 | 20784 | 22020 | 6008 | 7244 | 21 | 22 | .029 | .035 |
| 17 | 7542 | 7991 | 86521 | 91669 | 52917 | 56066 | 16774 | 19923 | 15 | 16 | .032 | .037 |
| 18 | 13527 | 14332 | 92895 | 98422 | 54226 | 57453 | 14644 | 17871 | 16 | 17 | .027 | .032 |
| 19 | 82277 | 87172 | 118499 | 125549 | 56743 | 60119 | 18897 | 22273 | 14 | 15 | .034 | .039 |
| 20 | 82620 | 87535 | 132459 | 140339 | 132459 | 140339 | 44171 | 52051 | 9 | 9 | .034 | .039 |
| 21 | 161292 | 170888 | 204945 | 217138 | 57677 | 61109 | 19322 | 22754 | 13 | 14 | .035 | .040 |
| 22 | 17572 | 18618 | 28827 | 30542 | 1770 | 1875 | 588 | 693 | 29 | 29 | .034 | .039 |
| 23 | 72397 | 76704 | 108341 | 114787 | 36165 | 38316 | 11835 | 13986 | 18 | 18 | .034 | .039 |
| 24 | 96653 | 102403 | 229015 | 242640 | 158561 | 177995 | 45637 | 55071 | 8 | 8 | .029 | .033 |
| 25 | 126656 | 134191 | 199008 | 210847 | 199008 | 210847 | 65017 | 76856 | 7 | 7 | .033 | .039 |
| 26 | 567188 | 600932 | 695127 | 736483 | 695127 | 736483 | 224880 | 266236 | 1 | 1 | .033 | .038 |
| 27 | 417297 | 442142 | 581212 | 615791 | 581212 | 615791 | 194043 | 228622 | 2 | 2 | .034 | .040 |
| 28 | 222400 | 235631 | 355372 | 376408 | 345783 | 366356 | 113824 | 134397 | 4 | 4 | .034 | .039 |
| 29 | 338995 | 359163 | 524169 | 555354 | 524169 | 555354 | 168149 | 199334 | 3 | 3 | .033 | .038 |
| 30 | 181545 | 192346 | 349723 | 370530 | 231094 | 244844 | 69816 | 83566 | 6 | 6 | .030 | .035 |
| Total | | | 5593557 | 5926341 | 4516253 | 4784947 | 1227746 | 1496440 | | | | |

*For description of industries, please see Table V.

TABLE XI. PROJECTED OUTPUT OF THE OMAHA SMSA, 1990 (\$1,000)

| Industry Number* | Final Demand | | Total Supply | | Total Local Output | | Increase in Output | | Rank of Increase | |
|---------------------|--------------|---------|--------------|----------|--------------------|---------|--------------------|---------|------------------|----|
| | 3½% | 4% | 3½% | 4% | 3½% | 4% | 3½% | 4% | 3½% | 4% |
| 1 | 20668 | 22634 | 480934 | 526698 | 192128 | 210411 | 94368 | 112651 | 11 | 12 |
| 2 | 46725 | 51171 | 258757 | 283380 | 32239 | 35306 | 16726 | 19793 | 23 | 23 |
| 3 | 7023 | 7691 | 65982 | 72261 | 8402 | 9202 | 4982 | 5782 | 28 | 28 |
| 4 | 435551 | 476988 | 435551 | 476998 | 435551 | 476998 | 263503 | 304950 | 6 | 6 |
| 5 | 38682 | 42363 | 155279 | 170056 | 140509 | 153880 | 83161 | 96532 | 12 | 13 |
| 6 | 1354161 | 1483021 | 1674203 | 1833518 | 1674203 | 1833518 | 808905 | 968220 | 1 | 1 |
| 7 | 118050 | 129283 | 133903 | 146645 | 22855 | 25209 | 13735 | 15909 | 25 | 25 |
| 8 | 2524 | 2784 | 51333 | 56217 | 13508 | 14791 | 8015 | 9298 | 27 | 27 |
| 9 | 33427 | 36608 | 42607 | 46662 | 38947 | 42654 | 23540 | 27247 | 21 | 21 |
| 10 | 11258 | 12329 | 113413 | 123909 | 53772 | 58889 | 30136 | 35253 | 20 | 20 |
| 11 | 26589 | 29119 | 133587 | 146298 | 92195 | 100968 | 54789 | 63542 | 16 | 16 |
| 12 | 57912 | 63423 | 137736 | 150843 | 102062 | 111775 | 59922 | 69635 | 14 | 14 |
| 13 | 74874 | 81999 | 139397 | 152662 | 25853 | 28313 | 15317 | 17777 | 24 | 24 |
| 14 | 18506 | 20267 | 63939 | 70023 | 20473 | 22421 | 12088 | 14036 | 26 | 26 |
| 15 | 22820 | 24991 | 24760 | 27116 | 2563 | 2807 | 1549 | 1793 | 30 | 30 |
| 16 | 4916 | 5384 | 81297 | 89033 | 38675 | 42356 | 22326 | 26007 | 22 | 22 |
| 17 | 8577 | 9393 | 144957 | 158751 | 60322 | 66063 | 35771 | 41512 | 17 | 17 |
| 18 | 18761 | 20547 | 170747 | 186996 | 100821 | 110416 | 57305 | 66900 | 15 | 15 |
| 19 | 102508 | 112263 | 166031 | 181831 | 103871 | 113755 | 62483 | 139267 | 13 | 11 |
| 20 | 240717 | 263623 | 342301 | 374874 | 342301 | 374874 | 206440 | 239013 | 8 | 8 |
| 21 | 231340 | 253354 | 297455 | 325760 | 59211 | 64846 | 35685 | 41320 | 18 | 18 |
| 22 | 20518 | 22471 | 40477 | 44329 | 2766 | 3029 | 1664 | 1927 | 29 | 29 |
| 23 | 107581 | 117819 | 162272 | 177714 | 54301 | 59468 | 31762 | 36929 | 19 | 19 |
| 24 | 156317 | 171192 | 406061 | 444072 | 348871 | 382070 | 201321 | 234520 | 9 | 9 |
| 25 | 153534 | 168145 | 266518 | 291880 | 266518 | 291880 | 159001 | 184363 | 10 | 10 |
| 26 | 925343 | 1013398 | 1160451 | 1270879 | 1160451 | 1270879 | 690204 | 800632 | 2 | 2 |
| 27 | 695161 | 761312 | 973835 | 1066504 | 973835 | 1066504 | 586668 | 679337 | 3 | 3 |
| 28 | 397818 | 435674 | 624989 | 684462 | 579977 | 635167 | 348019 | 403209 | 5 | 5 |
| 29 | 547507 | 599607 | 878335 | 961917 | 878335 | 961917 | 522312 | 605894 | 4 | 4 |
| 30 | 284862 | 311699 | 587600 | 643515 | 387451 | 424321 | 226175 | 263045 | 7 | 7 |
| Total | | | 10214437 | 11186433 | 8212966 | 8994507 | 4677872 | 5526329 | | |

*For listing of industries, see Appendix A.

TABLE XII. PROJECTED OUTPUT OF THE OMAHA SMSA, 1990 (\$1,000)

| Industry Number* | Final Demand | | Total Supply | | Total Local Output | | Increase in Output | | Rank of Increase | | Rate of Growth | |
|---------------------|--------------|---------|--------------|----------|-----------------------|---------|-----------------------|---------|---------------------|----|-------------------|------|
| | 3½% | 4% | 3½% | 4% | 3½% | 4% | 3½% | 4% | 3½% | 4% | 3½% | 4% |
| 1 | 17499 | 19931 | 323887 | 368897 | 166122 | 189206 | 71677 | 94761 | 13 | 13 | .021 | .027 |
| 2 | 39131 | 44569 | 198312 | 225870 | 36371 | 41425 | 17536 | 22590 | 23 | 23 | .024 | .028 |
| 3 | 9123 | 10390 | 67438 | 76809 | 7536 | 8584 | 4119 | 5167 | 28 | 28 | .029 | .034 |
| 4 | 441072 | 502365 | 441072 | 502365 | 435573 | 496103 | 263525 | 324055 | 6 | 6 | .035 | .040 |
| 5 | 31033 | 35346 | 144415 | 164484 | 140054 | 159517 | 82704 | 102167 | 11 | 11 | .034 | .039 |
| 6 | 853769 | 972412 | 1074141 | 1223408 | 1074141 | 1223408 | 444933 | 594200 | 4 | 4 | .020 | .025 |
| 7 | 114552 | 130471 | 129497 | 147492 | 24364 | 27750 | 14636 | 18022 | 24 | 24 | .035 | .040 |
| 8 | 2572 | 2929 | 50657 | 57696 | 14020 | 15968 | 8302 | 10250 | 27 | 27 | .034 | .039 |
| 9 | 35445 | 40371 | 43646 | 49712 | 35550 | 40491 | 21487 | 26428 | 21 | 21 | .035 | .040 |
| 10 | 13754 | 15665 | 109698 | 124942 | 64418 | 73369 | 35760 | 44711 | 20 | 19 | .030 | .035 |
| 11 | 25883 | 29480 | 133918 | 152528 | 111125 | 126568 | 65986 | 81429 | 14 | 14 | .034 | .039 |
| 12 | 59133 | 67350 | 142052 | 161792 | 140336 | 159838 | 82175 | 101677 | 12 | 12 | .033 | .038 |
| 13 | 74173 | 84481 | 135397 | 154213 | 23544 | 26816 | 13930 | 17202 | 25 | 25 | .034 | .039 |
| 14 | 21126 | 24062 | 63935 | 72820 | 17126 | 19506 | 10096 | 12476 | 26 | 26 | .033 | .038 |
| 15 | 24926 | 28390 | 26825 | 30553 | 2535 | 2888 | 1532 | 1885 | 30 | 30 | .035 | .040 |
| 16 | 7889 | 8986 | 77390 | 88145 | 34820 | 39659 | 20044 | 24883 | 22 | 22 | .032 | .037 |
| 17 | 12636 | 14392 | 144953 | 165096 | 88656 | 100975 | 52513 | 64832 | 17 | 17 | .034 | .039 |
| 18 | 22663 | 25812 | 155631 | 177258 | 90848 | 103472 | 51266 | 63890 | 18 | 18 | .031 | .037 |
| 19 | 137841 | 156996 | 198524 | 226112 | 95064 | 108274 | 57218 | 70428 | 16 | 16 | .035 | .040 |
| 20 | 138416 | 157651 | 221913 | 252751 | 221913 | 252751 | 133625 | 164463 | 10 | 10 | .035 | .040 |
| 21 | 270219 | 307770 | 343352 | 391066 | 96629 | 110057 | 58274 | 71702 | 15 | 15 | .035 | .040 |
| 22 | 29440 | 33531 | 48295 | 55006 | 2965 | 3377 | 1783 | 2195 | 29 | 29 | .035 | .040 |
| 23 | 121290 | 138145 | 181509 | 206732 | 60589 | 69008 | 36259 | 44678 | 19 | 20 | .035 | .039 |
| 24 | 161927 | 184429 | 383679 | 436996 | 265647 | 302562 | 152723 | 189638 | 9 | 9 | .032 | .037 |
| 25 | 212191 | 241678 | 333404 | 379736 | 333404 | 379736 | 199413 | 245745 | 8 | 8 | .034 | .039 |
| 26 | 950231 | 1082279 | 1164573 | 1326407 | 1164573 | 1326407 | 694326 | 856160 | 1 | 1 | .034 | .039 |
| 27 | 699114 | 796265 | 973728 | 1109040 | 973728 | 1109040 | 586559 | 721871 | 2 | 2 | .035 | .040 |
| 28 | 372594 | 424372 | 595200 | 677912 | 579313 | 659818 | 347354 | 427859 | 5 | 5 | .035 | .039 |
| 29 | 567931 | 646852 | 878160 | 1000192 | 878160 | 1000192 | 522140 | 644172 | 3 | 3 | .034 | .039 |
| 30 | 304149 | 346415 | 585905 | 667324 | 387165 | 440967 | 225887 | 279689 | 7 | 7 | .033 | .038 |
| Total | | | 9371107 | 10673354 | 7566289 | 8617732 | 4277782 | 5329225 | | | | |

*For description of industries, please see Table V.

the Omaha area in 1975 would be between \$5.5 billion and \$5.9 billion, while total local output would be between \$4.5 billion and \$4.8 billion, depending on whether the growth rate would be 3.5% or 4%. Comparable figures for the present study are \$6 billion to \$6.4 billion for the total volume of business, and \$4.9 billion to \$5.5 billion for the total local output. Chang found that in 1990 the total volume of business would be between \$9.4 billion and \$10.7 billion, and total local output to be between \$7.6 billion and \$8.6 billion, again depending on whether the growth rate of final demand would be 3.5% or 4%. Similar figures for this study are \$10.2 billion to \$11.1 billion for the total volume of business, and \$8.2 billion to \$9 billion for the total local output.

Both studies found the area will remain a trade, insurance, service and food processing center. The drawback to these studies is that they do not take into consideration the closing of the Swift and Cudahy plants in the Food and Kindred Products industry. The output for this industry is overstated; therefore, when Chang indicates that the industry will rank fourth in 1975, and this study indicates it will rank first in terms of increased output, both are optimistic estimates which assume that the rest of the food processors will fill the void left by the departure of the aforementioned meat packers.

Assumptions two and three, mentioned earlier in this section, i. e., constant technological coefficients and constant import coefficients, deserve special discussion. The former assumption does not imply that there will be no growth, but rather that what growth that does occur will be a natural growth to meet the continuous expansion of final demand in the area. When the increases in output through 1975 and 1990 are examined,

Food and Kindred Products, Retail and Wholesale Trade, Finance and Insurance, and Services will continue to rank among the leaders. But there are other industries which indicate great potential for growth such as New Construction, Electrical Machinery, Maintenance and Repair Construction, Nonelectric Machinery, and Chemicals and Allied Products. They are expected to expand their production by \$88 million to \$103 million, \$68 million to \$81 million, and \$26 million to \$32 million by 1975, with correspondingly larger increases by 1990. That these industries will grow this much simply as a result of natural growth implies that efforts to promote them will have even a more favorable impact on the area's overall output in the future.

The assumption of constant import coefficients over the period in question also has implications with regard to the reliability of the predictions. To the extent that import substitution can take place, the total output of the area will be higher. Such industries as Nonelectric Machinery and Maintenance and Repair Construction which have a high final demand should be studied with the idea of increasing their total local output (i. e., reducing imports). It may also be possible to have more import substitution in such industries as Transportation Equipment, Miscellaneous Manufacturing, and Apparel and Related Products, since they are among the leaders in imports now. Finally, industries such as Electrical Machinery and New Construction, which already enjoy an export surplus, may be able to increase that surplus. Alternatively, to the extent that import substitution does not take place, the economy will stagnate and the predictions for the future will be overstatements.

The basic purpose of this study has been to compare this study with Chang's to determine whether different data sources make any basic differences in the results obtained. Theoretically, the use of only local and locally obtained data would be the better methodology, but this has the disadvantage of being very time consuming. The fact that the two studies, the one making use of national information, the other using predominately primary local and regional data, arrived at the same general conclusions, indicates that future studies can make use of the time saving national information with little loss of validity. (This, of course, assumes that the Omaha area's economic development remains typical for that of the United States as a whole.) The studies were compared as to their conclusions on basic industries, total business volume, gross income, trade relations, the impact of Armour's closing, and the predictions of future Omaha output. In general, there was little difference. Both studies concluded that Omaha is basically a Food Processing, Trade, Insurance and Service center with an otherwise weak manufacturing base. These industries accounted for almost 60% of the Omaha output in 1963 in this study and about 55% in the Chang project. The gross income of the area was also found to be similar in the two studies: in Chang's work total income was \$1.6 billion with about 55% attributed to the basic four industries while the present study found total income to be \$1.7 billion with the same percent going to the same largest industries.

When trade relations were studied, both came to similar conclusions. Food and Kindred Products, Finance and Insurance, and Retail and Wholesale

Trade were the largest exporters, followed by Electrical Machinery, Utilities and Services. The major difference between the studies was the larger value of Electrical Machinery exports in this study (\$59 million), as opposed to Chang's study (\$11 million). Since the present study used sample data comprising 98% of the industry, it was felt to be the better estimate. Also, Utilities exports were larger in Chang's study (\$52 million to \$26 million). Finally, New Construction had a slight import surplus in Chang's study--\$2 million--and a slight export surplus in the present study--\$6 million.

The present study examined income multipliers in greater detail than the Chang study, developing multipliers for all 30 industries whereas the latter examined only the Food and Kindred Products multipliers. Table VIII (above) presents the data concerning this industry from both studies. Again there does not seem to be any significant difference.

Both studies indicate that the area will be a Trade, Finance, Service, and Food Processing area well into the future. They found that Electrical Machinery, Chemical and Allied Products, and Nonelectrical Machinery have good growth potentials due to high final demands in the area. In addition, Chang's study indicated that Printing and Publishing, and Transportation Equipment may share this future; in the present study, Maintenance and Repair Construction have high growth potentials for the same reasons. Finally, both studies agree that import substitution, particularly in such industries as Miscellaneous Manufacturing, Apparel and Related Products, and Nonelectric Machinery, will have favorable effects on future outputs.

Additional studies in the area can make use of some of the refinements in this study and add new ones. For example, they could continue with the detailed breakdown of final demand and rework the study using current data. This would enable comparisons to be made over time between the industries. This would be most helpful in determining structural and technological changes in the area over recent years. Finally, employment multipliers could be calculated and employment projections into the future could be obtained; both of which were contemplated in the present study, but ruled out because of data limitations.

APPENDIXES

APPENDIX A

INDUSTRY CLASSIFICATION FOR THE 1963 OMAHA INPUT-OUTPUT STUDY

| <u>Industry No. & Industry Title</u> | <u>Related 1958 U.S. Study No.</u> | <u>Related SIC Codes ('57 ed.)</u> |
|--|--|--|
| <u>Agriculture, Forestry & Fisheries</u> | | |
| 1 Livestock & Livestock Products | 1. | 013, pt. 014, 0193, pt. 02, pt. 0729 |
| 2 Other Agricultural Products | 2, 3, 4. | 011, 012, pt. 014, 0192, 0199, pt. 02, 074, 081, 082, 084, 086, 091, 071, 0723, 085, 098. |
| <u>Mining</u> | | |
| 3 Mining | 5, 6, 7, 8, 9, 10. | 1011, 106, 102, 103, 104, 105, 108, 109, 11, 12, 1311, 1321, 141, 142, 144, 145, 147, 148, 149. |
| <u>Construction</u> | | |
| 4 New Construction | 11. | 138, pt. 15, pt. 16, pt. 17, pt. 6561. |
| 5 Maintenance & Repair Construction | 12. | pt. 15, pt. 16, pt. 17. |
| <u>Manufacturing</u> | | |
| 6 Food & Kindred Products | 14. | 20. |
| 7 Apparel & Related Products | 18, 19. | 225, 23, 3992. |
| 8 Lumber & Wood Products | 20, 21. | 24. |
| 9 Furniture & Fixtures | 22, 23. | 25. |
| 10 Paper & Allied Products | 24, 25. | 26. |
| 11 Printing & Publishing | 26. | 27. |
| 12 Chemicals & Allied Products | 27, 29, 30. | 281 (excluding alumina pt. of 2819), 283, 284, 285, 286, 287. |
| 13 Petroleum & Coal Products | 31. | 29. |
| 14 Rubber & Plastics | 28, 32. | 282, 30. |

| <u>Industry No. & Industry Title</u> | <u>Related 1958 U.S. Study No.</u> | <u>Related SIC Codes ('57 ed.)</u> |
|--|---|---|
| 15 Leather & Leather Goods | 33, 34. | 31, 311, 312. |
| 16 Stone, Clay & Glass Products | 35, 36. | 321, 322, 323, 324, 325, 326, 327, 328, 329. |
| 17 Primary Metals | 37, 38. | 331, 332, 3393, 3399, 2819 (alumina only), 333, 334, 335, 336, 3392. |
| 18 Fabricated Metal Products | 39, 40, 41, 42. | 3411, 3491, 343, 344, 345, 346, 342, 347, 348, 349 (excluding 3491). |
| 19 Nonelectric Machinery | 43, 44, 45, 46, 47, 48, 49, 50, 51, 52. | 351, 352, 353, 354, 355, 356, 357, 358, 359. |
| 20 Electric Machinery | 53, 54, 55, 56, 57, 58. | 361, 362, 363, 364, 365, 366, 367, 369. |
| 21 Transportation Equipment | 59, 60, 61. | 371, 372, 373, 374, 375, 379. |
| 22 Instrument & Related Products | 62, 63. | 381, 382, 383, 384, 385, 386, 387. |
| 23 Miscellaneous Manufacturing | 13, 15, 16, 17, 64. | 19, 21, 221, 222, 223, 224, 226, 227, 228, 229, 39 (excluding 3992). |
| <u>Transportation, Communication, Electric, Gas, and Sanitary Services</u> | | |
| 24 Transportation & Warehousing | 65, 66, 67. | 40, 41, 42, 44, 45, 46, 47, 481, 482, 483, 489. |
| 25 Utilities | 68. | 49. |
| <u>Retail & Wholesale Trade</u> | | |
| 26 Retail & Wholesale Trade | 69. | 50 (excluding manufac- turers' sales offices), 52, 53, 54, 55, 56, 57, 58, 59, pt. 7399. |
| <u>Finance, Insurance & Real Estate</u> | | |
| 27 Finance & Insurance | 70. | 60, 61, 62, 63, 64, 66, 67. |

| <u>Industry No. & Industry Title</u> | <u>Related 1958 U.S. Study No.</u> | <u>Related SIC Codes ('57 ed.)</u> |
|--|--|---|
| 28 Real Estate & Rentals | 71. | 65 (excluding 6541 and pt. 6561). |
| <u>Services</u> | | |
| 29 Services | 72, 73, 74, 75, 76, 77. | 6541, 70, 72, 73 (excluding 7361, 7391 and pt. 7399), 75, 76, 78, 79, 80, 82, 84, 86, 89. |
| <u>Others</u> | | |
| 30 Undistributed | 78, 79, 80a, 80b, 81, 82, 83, 84, 85, 86, 87. | --- |

APPENDIX B

TABLE XIII. A REDUCED U. S. TRANSACTION TABLE, 1958 (\$1,000)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | Total | Final Demand | Total Demand | |
|-------------------------------------|----------------------------------|-----------------------------|--------|------------------|-----------------------------------|-------------------------|---------------------------|------------------------|----------------------|-------------------------|-----------------------|-----------------------------|---------------------------|-------------------|------------------------|-------------------------------|----------------|---------------------------|------------------------|--------------------|--------------------------|-------------------------------|---------------------|------------------------------|-----------|-------------------------|---------------------|-----------------------|----------|---------------|---------|--------------|--------------|--|
| | Livestock and Livestock Products | Other Agricultural Products | Mining | New Construction | Maintenance & Repair Construction | Food & Kindred Products | Apparel, Related Products | Lumber & Wood Products | Furniture & Fixtures | Paper & Allied Products | Printing & Publishing | Chemicals & Allied Products | Petroleum & Coal Products | Rubber & Plastics | Leather, Leather Goods | Stone, Clay, & Glass Products | Primary Metals | Fabricated Metal Products | Non-electric Machinery | Electric Machinery | Transportation Equipment | Instrument & Related Products | Misc. Manufacturing | Transportation & Warehousing | Utilities | Retail, Wholesale Trade | Finance & Insurance | Real Estate & Rentals | Services | Undistributed | Total | Final Demand | Total Demand | |
| 1 Livestock & Livestock Products | 4,153 | 1,998 | - | - | - | 16,303 | - | - | - | - | - | 5 | - | - | 52 | - | - | - | - | - | - | - | 158 | 2 | - | - | - | 850 | 16 | 29 | 23,566 | 2,758 | 26,324 | |
| 2 Other Agricultural Products | 7,093 | 2,334 | - | 237 | - | 5,075 | 149 | 998 | - | - | - | 30 | - | - | 1 | 4 | - | - | 3 | - | - | 4 | 2,293 | 35 | - | 153 | - | 1,323 | 8 | 704 | 20,444 | 5,971 | 26,415 | |
| 3 Mining | 7 | 97 | 1,129 | 624 | 131 | 52 | 1 | 2 | 2 | 125 | - | 577 | 9,365 | 47 | 3 | 623 | 2,463 | 9 | 18 | 15 | 20 | 3 | 21 | 29 | 1,715 | 8 | 6 | 150 | 41 | 148 | 17,431 | 904 | 18,335 | |
| 4 New Construction | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 52,415 | 52,415 | |
| 5 Maintenance & Repair Construction | 234 | 379 | 10 | 7 | 1 | 233 | 8 | 15 | 2 | 55 | 44 | 9 | 25 | 33 | - | 4 | 132 | 14 | 30 | 19 | 95 | 2 | 23 | 1,550 | 551 | 775 | 120 | 5,899 | 971 | 1,206 | 12,446 | 4,427 | 16,873 | |
| 6 Food & Kindred Products | 2,964 | 36 | - | 17 | - | 10,574 | - | - | 28 | 76 | - | 390 | 11 | 18 | 209 | 6 | 8 | - | 1 | - | - | 12 | 165 | 100 | - | 530 | - | 63 | 187 | 2,224 | 17,619 | 47,547 | 65,166 | |
| 7 Apparel & Related Products | 8 | 35 | - | - | 1 | 139 | 2,797 | 12 | 8 | 34 | - | 40 | 4 | 23 | 19 | 6 | 24 | 21 | 23 | 19 | 180 | 12 | 89 | 27 | - | 91 | 31 | 29 | 353 | 22 | 4,047 | 12,535 | 16,582 | |
| 8 Lumber & Wood Products | 2 | 102 | 31 | 3,280 | 418 | 102 | - | 2,597 | 499 | 670 | 1 | 43 | 2 | 13 | 30 | 69 | 33 | 107 | 60 | 47 | 126 | 4 | 117 | 26 | 3 | 150 | - | 26 | 8 | 2 | 8,568 | 322 | 8,890 | |
| 9 Furniture & Fixtures | - | - | - | 501 | 16 | - | 13 | 26 | 146 | 2 | 5 | - | - | 2 | 1 | 5 | 2 | 31 | 12 | 157 | 69 | 15 | 13 | - | - | 26 | - | 4 | 14 | - | 1,060 | 3,739 | 4,799 | |
| 10 Paper & Allied Products | 14 | 28 | 35 | 323 | 68 | 1,254 | 153 | 96 | 106 | 3,948 | 2,240 | 483 | 91 | 295 | 69 | 410 | 98 | 194 | 96 | 264 | 128 | 107 | 628 | 52 | 17 | 811 | 126 | 19 | 361 | 395 | 12,909 | 1,240 | 14,149 | |
| 11 Printing, Publishing | 5 | 8 | 3 | 8 | 1 | 123 | 17 | 33 | 3 | 126 | 1,597 | 61 | 1 | 25 | 19 | 18 | 38 | 31 | 18 | 19 | 24 | 2 | 59 | 195 | 5 | 235 | 394 | 57 | 5,817 | 893 | 9,835 | 2,816 | 12,651 | |
| 12 Chemicals & Allied Products | 63 | 1,148 | 181 | 564 | 950 | 439 | 45 | 107 | 92 | 374 | 187 | 4,255 | 579 | 1,857 | 88 | 302 | 351 | 190 | 86 | 175 | 220 | 115 | 329 | 88 | 11 | 244 | 11 | 112 | 1,087 | 69 | 14,319 | 6,294 | 20,613 | |
| 13 Petroleum & Coal Products | 48 | 920 | 150 | 986 | 375 | 284 | 8 | 79 | 10 | 146 | 11 | 738 | 1,243 | 73 | 5 | 92 | 189 | 101 | 109 | 38 | 94 | 9 | 60 | 1,536 | 245 | 727 | 94 | 363 | 372 | 56 | 9,161 | 8,837 | 17,998 | |
| 14 Rubber & Plastics | 21 | 167 | 91 | 311 | 66 | 158 | 236 | 110 | 150 | 278 | 15 | 638 | 22 | 1,378 | 194 | 169 | 197 | 138 | 286 | 495 | 828 | 62 | 1,937 | 264 | 10 | 240 | 53 | 55 | 510 | 22 | 9,101 | 2,052 | 11,153 | |
| 15 Leather & Leather Goods | 1 | 5 | - | - | - | - | 55 | 1 | 7 | 2 | 1 | - | - | 13 | 1,036 | 1 | - | 5 | 10 | 8 | 9 | 7 | 69 | 3 | - | 20 | 1 | 5 | 20 | 28 | 1,307 | 2,723 | 4,030 | |
| 16 Stone, Clay & Glass Products | 4 | 25 | 118 | 4,170 | 630 | 609 | - | 43 | 115 | 56 | - | 217 | 37 | 71 | 15 | 1,087 | 347 | 165 | 177 | 324 | 399 | 69 | 85 | 9 | 24 | 226 | - | 26 | 198 | 18 | 9,264 | 557 | 9,821 | |
| 17 Primary Metals | 1 | 1 | 166 | 3,095 | 555 | 37 | 2 | 28 | 266 | 18 | 15 | 402 | 3 | 29 | 1 | 51 | 7,474 | 6,126 | 3,143 | 1,921 | 3,541 | 258 | 697 | 110 | 68 | 23 | - | 31 | 40 | 244 | 28,346 | 1,145 | 29,491 | |
| 18 Fabricated Metal Products | 56 | 64 | 98 | 6,149 | 954 | 1,785 | 23 | 94 | 313 | 151 | 24 | 419 | 315 | 118 | 28 | 126 | 714 | 1,289 | 1,080 | 942 | 2,207 | 157 | 285 | 60 | 158 | 212 | - | 24 | 200 | 150 | 18,195 | 2,207 | 20,402 | |
| 19 Nonelectric Machinery | 7 | 199 | 452 | 899 | 70 | 17 | 1 | 33 | 41 | 66 | 43 | 158 | 4 | 49 | 1 | 30 | 549 | 788 | 3,657 | 573 | 1,523 | 161 | 604 | 143 | 12 | 243 | 5 | 107 | 1,193 | 151 | 11,779 | 13,250 | 25,029 | |
| 20 Electric Machinery | 8 | 22 | 70 | 1,479 | 289 | 34 | - | 12 | 14 | 19 | 12 | 17 | 7 | 32 | 6 | 49 | 251 | 285 | 1,230 | 3,240 | 1,356 | 318 | 410 | 314 | 17 | 188 | 2 | 49 | 1,492 | 166 | 11,388 | 9,921 | 21,309 | |
| 21 Transportation Equipment | 24 | 57 | 38 | 4 | - | - | 1 | 8 | 7 | - | 19 | 1 | - | 19 | - | 3 | 73 | 255 | 625 | 164 | 9,641 | 113 | 1,022 | 559 | 2 | 289 | 10 | 38 | 2,934 | 187 | 16,093 | 23,909 | 40,002 | |
| 22 Instrument & Related Products | - | - | 1 | 191 | 16 | - | 9 | - | 9 | 6 | 52 | 34 | 1 | 22 | 9 | 7 | 12 | 103 | 83 | 258 | 329 | 328 | 115 | 26 | - | 78 | - | 13 | 881 | 72 | 2,655 | 2,572 | 5,227 | |
| 23 Misc. Manufacturing | 7 | 61 | 10 | 93 | 49 | 40 | 5,463 | 15 | 299 | 87 | 58 | 28 | 7 | 643 | 134 | 37 | 50 | 67 | 78 | 222 | 867 | 162 | 6,189 | 95 | 8 | 156 | 43 | 42 | 1,905 | 504 | 17,419 | 12,136 | 29,555 | |
| 24 Transportation & Warehousing | 575 | 408 | 534 | 1,915 | 316 | 2,784 | 189 | 468 | 122 | 547 | 349 | 663 | 931 | 312 | 71 | 545 | 1,334 | 412 | 445 | 344 | 758 | 84 | 629 | 2,545 | 419 | 1,408 | 647 | 625 | 2,913 | 3,497 | 26,789 | 18,167 | 44,956 | |
| 25 Utilities | 91 | 173 | 253 | 150 | 25 | 356 | 53 | 58 | 27 | 207 | 55 | 323 | 262 | 112 | 17 | 293 | 683 | 145 | 135 | 114 | 201 | 19 | 184 | 210 | 3,380 | 1,916 | 125 | 249 | 1,092 | 449 | 11,357 | 8,934 | 20,291 | |
| 26 Retail & Wholesale Trade | 936 | 1,057 | 368 | 4,962 | 1,379 | 2,405 | 617 | 388 | 263 | 534 | 302 | 607 | 185 | 323 | 114 | 322 | 1,040 | 717 | 978 | 873 | 1,157 | 232 | 1,076 | 1,071 | 240 | 1,582 | 256 | 1,068 | 2,115 | 462 | 27,629 | 67,621 | 95,250 | |
| 27 Finance & Insurance | 189 | 321 | 180 | 435 | 49 | 344 | 105 | 56 | 26 | 85 | 122 | 180 | 114 | 69 | 28 | 98 | 217 | 150 | 174 | 85 | 153 | 28 | 174 | 768 | 111 | 1,580 | 5,389 | 2,064 | 1,099 | 53 | 14,446 | 12,029 | 26,475 | |
| 28 Real Estate & Rentals | 303 | 1,864 | 1,622 | 210 | 35 | 291 | 186 | 59 | 56 | 78 | 462 | 199 | 138 | 97 | 31 | 76 | 114 | 126 | 235 | 181 | 152 | 55 | 174 | 1,253 | 56 | 5,048 | 2,059 | 1,267 | 3,624 | 112 | 20,163 | 41,774 | 61,937 | |
| 29 Services | 248 | 966 | 424 | 2,876 | 92 | 1,993 | 215 | 143 | 94 | 194 | 608 | 1,263 | 394 | 256 | 109 | 195 | 340 | 314 | 447 | 650 | 747 | 157 | 644 | 1,931 | 267 | 5,997 | 1,253 | 1,788 | 5,175 | 1,265 | 31,045 | 47,144 | 78,189 | |
| 30 Undistributed | 238 | 854 | 1,956 | 325 | 54 | 3,105 | 194 | 529 | 52 | 1,245 | 455 | 708 | 649 | 407 | 85 | 293 | 2,248 | 388 | 678 | 560 | 932 | 248 | 1,212 | 2,555 | 3,058 | 3,288 | 1,019 | 770 | 2,282 | 1,263 | 31,650 | 31,384 | 63,034 | |
| Intermediate Input Total | 17,300 | 13,329 | 7,920 | 33,811 | 6,540 | 48,536 | 10,540 | 6,010 | 2,757 | 9,129 | 6,677 | 12,488 | 14,390 | 6,336 | 2,375 | 4,921 | 18,981 | 12,171 | 13,917 | 11,707 | 25,756 | 2,743 | 19,461 | 15,556 | 10,377 | 26,244 | 11,644 | 17,116 | 36,908 | 14,391 | 440,031 | | | |
| Value Added | 9,024 | 13,086 | 10,415 | 18,604 | 10,333 | 16,630 | 6,042 | 2,880 | 2,042 | 5,020 | 5,974 | 8,125 | 3,608 | 4,817 | 1,655 | 4,900 | 10,510 | 8,231 | 11,112 | 9,602 | 14,246 | 2,484 | 10,094 | 29,400 | 9,914 | 69,006 | 14,831 | 44,821 | 41,281 | 48,643 | | 447,330 | | |
| Total | 26,324 | 26,415 | 18,335 | 52,415 | 16,873 | 65,166 | 16,582 | 8,890 | 4,799 | 14,149 | 12,651 | 20,613 | 17,998 | 11,153 | 4,030 | 9,821 | 29,491 | 20,402 | 25,029 | 21,309 | 40,002 | 5,227 | 29,555 | 44,956 | 20,291 | 95,250 | 26,475 | 61,937 | 78,189 | 63,034 | | | 887,361 | |

APPENDIX C

TABLE XIV. DIRECT PRODUCTION REQUIREMENT, OMAHA SMSA, 1963

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|-------------------------------------|----------------------------------|-----------------------------|---------|------------------|-----------------------------------|-------------------------|---------------------------|------------------------|----------------------|-------------------------|-----------------------|-----------------------------|---------------------------|-------------------|------------------------|-------------------------------|----------------|---------------------------|------------------------|--------------------|--------------------------|-------------------------------|---------------------|------------------------------|-----------|-------------------------|---------------------|-----------------------|----------|---------------|
| | Livestock and Livestock Products | Other Agricultural Products | Mining | New Construction | Maintenance & Repair Construction | Food & Kindred Products | Apparel, Related Products | Lumber & Wood Products | Furniture & Fixtures | Paper & Allied Products | Printing & Publishing | Chemicals & Allied Products | Petroleum & Coal Products | Rubber & Plastics | Leather, Leather Goods | Stone, Clay, & Glass Products | Primary Metals | Fabricated Metal Products | Non-electric Machinery | Electric Machinery | Transportation Equipment | Instrument & Related Products | Misc. Manufacturing | Transportation & Warehousing | Utilities | Retail, Wholesale Trade | Finance & Insurance | Real Estate & Rentals | Services | Undistributed |
| 1 Livestock & Livestock Products | 0.15776 | 0.07564 | - | - | - | 0.25018 | - | - | - | - | - | 0.00024 | - | - | 0.01290 | - | - | - | - | - | - | - | 0.00535 | 0.00004 | - | - | - | 0.01372 | 0.00020 | 0.00046 |
| 2 Other Agricultural Products | .26945 | .08836 | - | 0.00452 | - | .07788 | 0.00899 | 0.11226 | - | - | - | .00146 | - | - | .00025 | 0.00041 | - | - | 0.00012 | - | - | 0.00077 | .07758 | .00078 | - | 0.00161 | - | .02136 | .00010 | .01117 |
| 3 Mining | .00027 | .00367 | 0.06158 | .01190 | 0.00776 | .00080 | .00006 | .00022 | 0.00042 | 0.00883 | - | .02799 | 0.52034 | 0.00421 | .00074 | .06344 | 0.08352 | 0.00044 | .00072 | 0.00070 | 0.00050 | .00057 | .00071 | .00065 | 0.08452 | .00008 | 0.00023 | .00242 | .00052 | .00235 |
| 4 New Construction | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 5 Maintenance & Repair Construction | .00889 | .01435 | .00055 | .00013 | .00006 | .00358 | .00048 | .00169 | .00042 | .00389 | 0.00348 | .00044 | .00139 | .00296 | - | .00041 | .00448 | .00069 | .00120 | .00089 | .00237 | .00038 | .00078 | .03448 | .02715 | .00814 | .00453 | .09524 | .01242 | .01913 |
| 6 Food & Kindred Products | .11260 | .00136 | - | .00032 | - | .16226 | - | - | .00583 | .00537 | - | .01892 | .00061 | .00161 | .05186 | .00061 | .00027 | - | .00004 | - | - | .00230 | .00558 | .00222 | - | .00556 | - | .00102 | .00239 | .03528 |
| 7 Apparel & Related Products | .00030 | .00133 | - | - | .00006 | .00213 | .16868 | .00135 | .00167 | .00240 | - | .00194 | .00022 | .00206 | .00471 | .00061 | .00081 | .00103 | .00092 | .00089 | .00450 | .00230 | .00301 | .00060 | - | .00096 | .00117 | .00047 | .00451 | .00035 |
| 8 Lumber & Wood Products | .00008 | .00386 | .00169 | .06258 | .02477 | .00157 | - | .29213 | .10398 | .04735 | .00008 | .00209 | .00011 | .00117 | .00744 | .00703 | .00112 | .00524 | .00240 | .00221 | .00315 | .00077 | .00396 | - | .00015 | .00157 | - | .00042 | .00010 | .00003 |
| 9 Furniture & Fixtures | - | - | - | .00956 | .00095 | - | .00078 | .00292 | .03042 | .00014 | .00040 | - | - | .00018 | .00025 | .00051 | .00007 | .00152 | .00048 | .00737 | .00172 | .00287 | .00044 | .00058 | - | .00027 | - | .00006 | .00018 | - |
| 10 Paper & Allied Products | .00053 | .00106 | .00191 | .00616 | .00403 | .01924 | .00923 | .01080 | .02209 | .27903 | .17706 | .02343 | .00506 | .02645 | .01712 | .04175 | .00332 | .00951 | .00384 | .01239 | .00320 | .02047 | .02125 | .00116 | .00084 | .00851 | .00476 | .00031 | .00462 | .00627 |
| 11 Printing & Publishing | .00019 | .00030 | .00016 | .00015 | .00006 | .00189 | .00103 | .00371 | .00063 | .00891 | .12624 | .00296 | .00006 | .00224 | .00471 | .00183 | .00129 | .00152 | .00072 | .00089 | .00060 | .00038 | .00200 | .00434 | .00025 | .00247 | .01488 | .00092 | .07440 | .01417 |
| 12 Chemicals & Allied Products | .00239 | .04346 | .00987 | .01076 | .05630 | .00674 | .00271 | .01204 | .01917 | .02643 | .01478 | .20642 | .03217 | .16650 | .02184 | .03075 | .01190 | .00931 | .00344 | .00821 | .00550 | .02200 | .01113 | .00196 | .00054 | .00256 | .00042 | .00181 | .01390 | .00109 |
| 13 Petroleum & Coal Products | .00182 | .03483 | .00818 | .01881 | .02222 | .00436 | .00048 | .00889 | .00208 | .01032 | .00087 | .03580 | .06906 | .00656 | .00124 | .00937 | .00641 | .00495 | .00435 | .00178 | .00235 | .00172 | .00203 | .03417 | .01207 | .00763 | .00355 | .00586 | .00476 | .00089 |
| 14 Rubber & Plastics | .00080 | .00632 | .00496 | .00593 | .00391 | .00242 | .01423 | .01237 | .03126 | .01965 | .00119 | .03095 | .00122 | .12355 | .04814 | .01721 | .00668 | .00676 | .01143 | .02323 | .02070 | .01186 | .06554 | .00587 | .00049 | .00252 | .00200 | .00089 | .00652 | .00035 |
| 15 Leather & Leather Goods | .00004 | .00019 | - | - | - | - | .00332 | .00011 | .00146 | .00014 | .00008 | - | - | .00117 | .25707 | .00010 | - | .00025 | .00040 | .00038 | .00022 | .00134 | .00233 | .00007 | - | .00021 | .00004 | .00008 | .00026 | .00044 |
| 16 Stone, Clay & Glass Products | .00015 | .00095 | .00644 | .07956 | .03734 | .00935 | - | .00484 | .02396 | .00396 | - | .01053 | .00206 | .00637 | .00372 | .11068 | .01177 | .00809 | .00707 | .01520 | .00997 | .01320 | .00288 | .00020 | .00118 | .00237 | - | .00042 | .00253 | .00029 |
| 17 Primary Metals | .00004 | .00004 | .00905 | .05905 | .03289 | .00057 | .00012 | .00315 | .05543 | .00127 | .00119 | .01950 | .00017 | .00260 | .00025 | .00519 | .25343 | .30026 | .12557 | .09015 | .08852 | .04936 | .02358 | .00245 | .00335 | .00024 | - | .00050 | .00051 | .00387 |
| 18 Fabricated Metal Products | .00213 | .00242 | .00534 | .11731 | .05654 | .02739 | .00139 | .01057 | .06522 | .01067 | .00190 | .02033 | .01750 | .01058 | .00695 | .01283 | .02421 | .06318 | .04315 | .04421 | .05517 | .03004 | .00964 | .00133 | .00779 | .00223 | - | .00039 | .00256 | .00238 |
| 19 Nonelectric Machinery | .00027 | .00753 | .02465 | .01715 | .00415 | .00026 | .00006 | .00371 | .00854 | .00466 | .00340 | .00766 | .00022 | .00439 | .00025 | .00305 | .01862 | .03862 | .14611 | .02689 | .03807 | .03080 | .02044 | .00318 | .00059 | .00255 | .00019 | .00173 | .01526 | .00240 |
| 20 Electric Machinery | .00030 | .00083 | .00382 | .02822 | .01715 | .00052 | - | .00135 | .00292 | .00134 | .00095 | .00082 | .00039 | .00287 | .00149 | .00499 | .00851 | .01397 | .04914 | .15205 | .03390 | .06084 | .01387 | .00698 | .00084 | .00197 | .00008 | .00079 | .01908 | .00263 |
| 21 Transportation Equipment | .00091 | .00216 | .00207 | .00008 | - | - | .00006 | .00090 | .00146 | - | .00150 | .00005 | - | .00170 | - | .00031 | .00248 | .01250 | .02497 | .00770 | .24101 | .02162 | .03458 | .01243 | .00010 | .00303 | .00038 | .00061 | .03752 | .00297 |
| 22 Instruments & Related Products | - | - | .00005 | .00364 | .00095 | - | .00054 | - | .00188 | .00042 | .00411 | .00165 | .00006 | .00197 | .00223 | .00071 | .00041 | .00505 | .00332 | .01211 | .00822 | .06275 | .00389 | .00058 | - | .00082 | - | .00021 | .01127 | .00114 |
| 23 Miscellaneous Manufacturing | .00027 | .00231 | .00055 | .00177 | .00290 | .00061 | .32945 | .00169 | .06230 | .00615 | .00458 | .00136 | .00039 | .05765 | .03325 | .00377 | .00170 | .00328 | .00312 | .01042 | .02167 | .03099 | .20941 | .00211 | .00039 | .00164 | .00162 | .00068 | .02436 | .00800 |
| 24 Transportation & Warehousing | .02184 | .01545 | .02912 | .03654 | .01873 | .04272 | .01140 | .05264 | .02542 | .03866 | .02759 | .03216 | .05173 | .02797 | .01762 | .05549 | .04523 | .02019 | .01778 | .01614 | .01895 | .01607 | .02128 | .05661 | .02065 | .01478 | .02444 | .01009 | .03726 | .05548 |
| 25 Utilities | .00346 | .00655 | .01380 | .00286 | .00148 | .00546 | .00320 | .00652 | .00563 | .01463 | .00435 | .01567 | .01456 | .01004 | .00422 | .02983 | .02316 | .00711 | .00539 | .00535 | .00502 | .00363 | .00623 | .00467 | .16658 | .02012 | .00472 | .00402 | .01397 | .00712 |
| 26 Retail & Wholesale Trade | .03556 | .04002 | .02007 | .09467 | .08173 | .03691 | .03721 | .04364 | .05480 | .03774 | .02387 | .02945 | .01028 | .02896 | .02829 | .03279 | .03526 | .03514 | .03907 | .04097 | .02892 | .04438 | .03641 | .02382 | .01183 | .01661 | .00967 | .01724 | .02705 | .00733 |
| 27 Finance & Insurance | .00718 | .01215 | .00982 | .00830 | .00290 | .00528 | .00633 | .00630 | .00542 | .00601 | .00964 | .00873 | .00633 | .00619 | .00695 | .00998 | .00736 | .00735 | .00695 | .00399 | .00382 | .00536 | .00589 | .01708 | .00547 | .01659 | .20355 | .03332 | .01406 | .00084 |
| 28 Real Estate & Rentals | .01151 | .07057 | .08846 | .00401 | .00207 | .00447 | .01122 | .00664 | .01167 | .00551 | .03652 | .00965 | .00767 | .00870 | .00769 | .00772 | .00387 | .00618 | .00939 | .00849 | .00380 | .01052 | .00589 | .02787 | .00276 | .05300 | .07777 | .02046 | .04635 | .00178 |
| 29 Services | .00942 | .03657 | .02313 | .05487 | .00545 | .03058 | .01297 | .01609 | .01959 | .01371 | .04806 | .06127 | .02189 | .02295 | .02705 | .01986 | .01153 | .01539 | .01786 | .03050 | .01867 | .03004 | .02179 | .04295 | .01316 | .06296 | .04733 | .02887 | .06619 | .02007 |
| 30 Undistributed | .00904 | .03233 | .10668 | .00620 | .00320 | .04765 | .01170 | .05951 | .01084 | .08799 | .03597 | .03435 | .03606 | .03649 | .02109 | .02983 | .07623 | .01902 | .02709 | .02628 | .02330 | .04745 | .04101 | .05683 | .15071 | .03452 | .03849 | .01243 | .02919 | .02004 |
| Adjustment* | -.00001 | -.00001 | .00001 | .00001 | .00002 | .00001 | -.00001 | .00000 | -.00002 | .00002 | -.00003 | .00001 | -.00002 | .00001 | .00001 | .00001 | -.00002 | .00001 | -.00001 | .00000 | .00005 | .00000 | -.00001 | .00002 | .00000 | .00001 | -.00001 | .00001 | .00000 | -.00001 |
| Value Added | .34281 | .49540 | .56804 | .35494 | .61240 | .25519 | .36437 | .32396 | .42551 | .35480 | .47222 | .39417 | .20047 | .43190 | .41067 | .49893 | .35638 | .40344 | .44397 | .45061 | .35613 | .47522 | .34153 | .65397 | .48859 | .72447 | .56019 | .72365 | .52796 | .77169 |
| Total | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 |

*Rounding errors.

APPENDIX D

TABLE XV. INTERINDUSTRY TRANSACTIONS TABLE, OMAHA SMSA, 1963 (\$1,000)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|-------------------------------------|----------------------------------|-----------------------------|--------|------------------|-----------------------------------|-------------------------|---------------------------|------------------------|----------------------|-------------------------|-----------------------|-----------------------------|---------------------------|-------------------|------------------------|-------------------------------|----------------|---------------------------|------------------------|
| | Livestock and Livestock Products | Other Agricultural Products | Mining | New Construction | Maintenance & Repair Construction | Food & Kindred Products | Apparel, Related Products | Lumber & Wood Products | Furniture & Fixtures | Paper & Allied Products | Printing & Publishing | Chemicals & Allied Products | Petroleum & Coal Products | Rubber & Plastics | Leather, Leather Goods | Stone, Clay, & Glass Products | Primary Metals | Fabricated Metal Products | Non-electric Machinery |
| 1 Livestock & Livestock Products | 15,423 | 1,173 | - | - | - | 216,478 | - | - | - | - | - | 10 | - | - | 13 | - | - | - | - |
| 2 Other Agricultural Products | 26,341 | 1,370 | - | 778 | - | 67,389 | 82 | 617 | - | - | - | 62 | - | - | - | 7 | - | - | 5 |
| 3 Mining | 26 | 57 | 210 | 2,047 | 445 | 692 | 1 | 1 | 6 | 209 | - | 1,179 | 5,482 | 35 | 1 | 1,037 | 2,050 | 19 | 30 |
| 4 New Construction | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 5 Maintenance & Repair Construction | 869 | 223 | 2 | 22 | 3 | 3,098 | 4 | 9 | 6 | 92 | 130 | 19 | 15 | 25 | - | 7 | 110 | 30 | 50 |
| 6 Food & Kindred Products | 11,008 | 21 | - | 55 | - | 140,402 | - | - | 90 | 127 | - | 797 | 6 | 13 | 53 | 10 | 7 | - | 2 |
| 7 Apparel & Related Products | 29 | 21 | - | - | 3 | 1,843 | 1,538 | 7 | 26 | 57 | - | 82 | 2 | 17 | 5 | 10 | 20 | 45 | 38 |
| 8 Lumber & Wood Products | 8 | 60 | 6 | 10,767 | 1,421 | 1,359 | - | 1,606 | 1,602 | 1,119 | 3 | 88 | 1 | 10 | 8 | 115 | 27 | 228 | 99 |
| 9 Furniture & Fixtures | - | - | - | 1,645 | 54 | - | 7 | 16 | 469 | 3 | 15 | - | - | 2 | - | 8 | 2 | 66 | 20 |
| 10 Paper & Allied Products | 52 | 16 | 7 | 1,060 | 231 | 16,648 | 84 | 59 | 340 | 6,595 | 6,626 | 987 | 53 | 222 | 17 | 682 | 82 | 414 | 159 |
| 11 Printing, Publishing | 19 | 5 | 1 | 26 | 3 | 1,635 | 9 | 20 | 10 | 211 | 4,724 | 125 | 1 | 19 | 5 | 30 | 32 | 66 | 30 |
| 12 Chemicals & Allied Products | 234 | 674 | 34 | 1,851 | 3,229 | 5,832 | 25 | 66 | 295 | 625 | 553 | 8,698 | 339 | 1,396 | 22 | 503 | 292 | 405 | 142 |
| 13 Petroleum & Coal Products | 178 | 540 | 28 | 3,236 | 1,274 | 3,773 | 4 | 49 | 32 | 244 | 33 | 1,509 | 728 | 55 | 1 | 153 | 157 | 215 | 180 |
| 14 Rubber & Plastics | 78 | 98 | 17 | 1,020 | 224 | 2,094 | 130 | 68 | 482 | 464 | 45 | 1,304 | 13 | 1,036 | 49 | 281 | 164 | 294 | 473 |
| 15 Leather & Leather Goods | 4 | 3 | - | - | - | - | 30 | 1 | 22 | 3 | 3 | - | - | 10 | 261 | 2 | - | 11 | 17 |
| 16 Stone, Clay & Glass Products | 15 | 15 | 22 | 13,688 | 2,141 | 8,090 | - | 27 | 369 | 94 | - | 444 | 22 | 53 | 4 | 1,809 | 289 | 352 | 293 |
| 17 Primary Metals | 4 | 1 | 31 | 10,160 | 1,886 | 493 | 1 | 17 | 854 | 30 | 45 | 822 | 2 | 22 | - | 85 | 6,222 | 13,066 | 5,197 |
| 18 Fabricated Metal Products | 208 | 38 | 18 | 20,183 | 3,243 | 23,700 | 13 | 58 | 1,005 | 252 | 71 | 857 | 184 | 89 | 7 | 210 | 594 | 2,749 | 1,786 |
| 19 Nonelectric Machinery | 26 | 117 | 84 | 2,951 | 238 | 225 | 1 | 20 | 132 | 110 | 127 | 323 | 2 | 37 | - | 50 | 457 | 1,681 | 6,047 |
| 20 Electric Machinery | 29 | 13 | 13 | 4,855 | 984 | 450 | - | 7 | 45 | 32 | 36 | 35 | 4 | 24 | 2 | 82 | 209 | 608 | 2,034 |
| 21 Transportation Equipment | 89 | 34 | 7 | 14 | - | - | 1 | 5 | 22 | - | 56 | 2 | - | 14 | - | 5 | 61 | 544 | 1,033 |
| 22 Instrument & Related Products | - | - | 1 | 626 | 54 | - | 5 | - | 29 | 10 | 154 | 70 | 1 | 17 | 2 | 12 | 10 | 220 | 137 |
| 23 Misc. Manufacturing | 26 | 36 | 2 | 305 | 166 | 528 | 3,005 | 9 | 960 | 145 | 171 | 57 | 4 | 483 | 34 | 62 | 42 | 143 | 129 |
| 24 Transportation & Warehousing | 2,135 | 240 | 100 | 6,287 | 1,074 | 36,965 | 104 | 289 | 392 | 914 | 1,033 | 1,355 | 545 | 235 | 18 | 907 | 1,110 | 879 | 736 |
| 25 Utilities | 338 | 102 | 47 | 492 | 85 | 4,724 | 29 | 36 | 87 | 346 | 163 | 660 | 153 | 84 | 4 | 488 | 569 | 309 | 223 |
| 26 Retail & Wholesale Trade | 3,476 | 621 | 69 | 16,288 | 4,687 | 31,938 | 339 | 240 | 844 | 892 | 893 | 1,241 | 108 | 243 | 29 | 536 | 866 | 1,529 | 1,617 |
| 27 Finance & Insurance | 702 | 188 | 34 | 1,428 | 166 | 4,569 | 58 | 35 | 84 | 142 | 361 | 368 | 67 | 52 | 7 | 163 | 181 | 320 | 288 |
| 28 Real Estate & Rentals | 1,125 | 1,095 | 302 | 690 | 119 | 3,868 | 102 | 36 | 180 | 130 | 1,367 | 407 | 81 | 73 | 8 | 126 | 95 | 269 | 389 |
| 29 Services | 921 | 567 | 79 | 9,440 | 313 | 26,461 | 118 | 88 | 302 | 324 | 1,799 | 2,582 | 231 | 192 | 27 | 325 | 283 | 670 | 739 |
| 30 Undistributed | 884 | 501 | 365 | 1,067 | 184 | 41,231 | 107 | 327 | 167 | 2,080 | 1,346 | 1,447 | 380 | 306 | 21 | 488 | 1,871 | 828 | 1,121 |
| Inputs from Industries | 64,247 | 7,829 | 1,479 | 110,981 | 22,227 | 644,485 | 5,797 | 3,713 | 8,852 | 15,250 | 19,754 | 25,530 | 8,424 | 4,764 | 598 | 8,193 | 15,802 | 25,960 | 23,014 |
| Value Added | 33,513 | 7,684 | 1,941 | 61,067 | 35,121 | 220,813 | 3,323 | 1,780 | 6,555 | 8,386 | 17,672 | 16,610 | 2,112 | 3,621 | 416 | 8,156 | 8,749 | 17,556 | 18,374 |
| Total Local Production | 97,760 | 15,513 | 3,420 | 172,048 | 57,348 | 865,298 | 9,120 | 5,493 | 15,407 | 23,636 | 37,426 | 42,140 | 10,536 | 8,385 | 1,014 | 16,349 | 24,551 | 43,516 | 41,388 |
| Imports | 146,956 | 109,008 | 23,440 | - | 6,029 | - | 44,316 | 15,387 | 1,449 | 26,095 | 16,804 | 14,728 | 46,274 | 17,853 | 8,785 | 18,017 | 34,448 | 30,183 | 24,802 |
| Total Supply | 244,716 | 124,521 | 26,860 | 172,048 | 63,377 | 865,298 | 53,436 | 20,880 | 16,856 | 49,731 | 54,230 | 56,868 | 56,810 | 26,238 | 9,799 | 34,366 | 58,999 | 73,699 | 66,190 |
| Import Ratio | 1.5032 | 7.0269 | 6.8538 | - | 0.1051 | - | 4.8592 | 2.8012 | 0.0940 | 1.1040 | 0.4490 | 0.3495 | 4.3920 | 2.1292 | 8.6637 | 1.1020 | 1.4031 | 0.6936 | 0.5993 |

APPENDIX F

TABLE XVII. TOTAL REQUIREMENTS TABLE, OMAHA SMSA, 1963

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|-------------------------------------|----------------------------------|-----------------------------|---------|------------------|-----------------------------------|-------------------------|---------------------------|------------------------|----------------------|-------------------------|-----------------------|-----------------------------|---------------------------|-------------------|------------------------|
| | Livestock and Livestock Products | Other Agricultural Products | Mining | New Construction | Maintenance & Repair Construction | Food & Kindred Products | Apparel, Related Products | Lumber & Wood Products | Furniture & Fixtures | Paper & Allied Products | Printing & Publishing | Chemicals & Allied Products | Petroleum & Coal Products | Rubber & Plastics | Leather, Leather Goods |
| 1 Livestock & Livestock Products | 1.08432 | .01062 | .00032 | .00115 | .00079 | .32583 | .00030 | .00063 | .00283 | .00169 | .00117 | .00644 | .00023 | .00084 | .00336 |
| 2 Other Agricultural Products | .12298 | 1.01268 | .00047 | .00806 | .00169 | .13231 | .00341 | .03279 | .00669 | .00224 | .00168 | .00470 | .00026 | .00124 | .00115 |
| 3 Mining | .00101 | .00133 | 1.00849 | .02240 | .01444 | .00469 | .00028 | .00106 | .00640 | .00747 | .00249 | .03154 | .09923 | .00420 | .00036 |
| 4 New Construction | .00000 | .00000 | .00000 | 1.00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 |
| 5 Maintenance & Repair Construction | .00605 | .00313 | .00170 | .00657 | 1.00329 | .01183 | .00071 | .00206 | .00527 | .00512 | .00853 | .00564 | .00132 | .00275 | .00045 |
| 6 Food & Kindred Products | .05880 | .00113 | .00054 | .00287 | .00229 | 1.21428 | .00038 | .00088 | .00882 | .00578 | .00242 | .02208 | .00063 | .00257 | .00699 |
| 7 Apparel & Related Products | .00038 | .00024 | .00005 | .00084 | .00047 | .00320 | 1.02975 | .00050 | .00220 | .00156 | .00054 | .00230 | .00010 | .00096 | .00058 |
| 8 Lumber & Wood Products | .00047 | .00065 | .00033 | .07059 | .02538 | .00353 | .00021 | 1.08358 | .10746 | .02846 | .00428 | .00310 | .00016 | .00102 | .00098 |
| 9 Furniture & Fixtures | .00003 | .00001 | .00001 | .01042 | .00117 | .00014 | .00015 | .00088 | 1.02888 | .00016 | .00037 | .00011 | .00001 | .00011 | .00004 |
| 10 Paper & Allied Products | .00230 | .00063 | .00066 | .01487 | .00885 | .03064 | .00273 | .00448 | .02895 | 1.15558 | .15659 | .02753 | .00161 | .01263 | .00268 |
| 11 Printing & Publishing | .00138 | .00075 | .00065 | .00814 | .00259 | .00851 | .00072 | .00224 | .00465 | .00750 | 1.10093 | .00946 | .00077 | .00261 | .00102 |
| 12 Chemicals & Allied Products | .00331 | .00699 | .00189 | .02011 | .06351 | .01444 | .00135 | .00513 | .02745 | .01916 | .01759 | 1.18577 | .00767 | .06660 | .00339 |
| 13 Petroleum & Coal Products | .00261 | .00500 | .00151 | .02450 | .02454 | .01023 | .00045 | .00373 | .00604 | .00789 | .00389 | .03475 | 1.01384 | .00497 | .00048 |
| 14 Rubber & Plastics | .00103 | .00117 | .00089 | .01147 | .00732 | .00541 | .00421 | .00420 | .03510 | .01244 | .00386 | .03005 | .00069 | 1.04371 | .00564 |
| 15 Leather & Leather Goods | .00003 | .00002 | .00001 | .00013 | .00006 | .00008 | .00066 | .00005 | .00153 | .00012 | .00012 | .00006 | .00000 | .00043 | 1.02733 |
| 16 Stone, Clay & Glass Products | .00105 | .00038 | .00104 | .08729 | .03764 | .01330 | .00018 | .00175 | .02583 | .00301 | .00116 | .01102 | .00069 | .00316 | .00059 |
| 17 Primary Metals | .00125 | .00060 | .00213 | .09981 | .04895 | .01007 | .00094 | .00237 | .07533 | .00373 | .00362 | .02545 | .00131 | .00408 | .00048 |
| 18 Fabricated Metal Products | .00330 | .00080 | .00112 | .12860 | .05701 | .03706 | .00070 | .00374 | .06764 | .00761 | .00393 | .02130 | .00387 | .00552 | .00118 |
| 19 Nonelectric Machinery | .00077 | .00133 | .00374 | .02671 | .00792 | .00339 | .00068 | .00171 | .01336 | .00389 | .00479 | .01009 | .00076 | .00288 | .00026 |
| 20 Electric Machinery | .00081 | .00046 | .00097 | .03899 | .02050 | .00365 | .00055 | .00103 | .00663 | .00200 | .00292 | .00380 | .00051 | .00207 | .00039 |
| 21 Transportation Equipment | .00115 | .00067 | .00065 | .00619 | .00221 | .00376 | .00103 | .00097 | .00513 | .00130 | .00381 | .00380 | .00050 | .00179 | .00029 |
| 22 Instruments & Related Products | .00018 | .00011 | .00011 | .00573 | .00173 | .00097 | .00025 | .00017 | .00274 | .00059 | .00388 | .00249 | .00013 | .00103 | .00031 |
| 23 Miscellaneous Manufacturing | .00059 | .00056 | .00020 | .00623 | .00430 | .00277 | .06250 | .00092 | .06534 | .00429 | .00564 | .00402 | .00029 | .02127 | .00409 |
| 24 Transportation & Warehousing | .01467 | .00337 | .00531 | .05523 | .02687 | .06706 | .00338 | .01800 | .03690 | .02792 | .03094 | .03952 | .01190 | .01500 | .00308 |
| 25 Utilities | .00330 | .00155 | .00259 | .01256 | .00708 | .01287 | .00126 | .00324 | .01193 | .01166 | .00775 | .02044 | .00401 | .00612 | .00094 |
| 26 Retail & Wholesale Trade | .01998 | .00636 | .00364 | .11141 | .08281 | .05453 | .00802 | .01442 | .06281 | .02483 | .02598 | .03378 | .00334 | .01360 | .00397 |
| 27 Finance & Insurance | .00588 | .00279 | .00243 | .01860 | .00791 | .01434 | .00205 | .00347 | .01170 | .00634 | .01344 | .01399 | .00235 | .00449 | .00136 |
| 28 Real Estate & Rentals | .00898 | .01022 | .01243 | .01920 | .01012 | .01737 | .00311 | .00433 | .01964 | .00707 | .03454 | .01705 | .00371 | .00593 | .00160 |
| 29 Services | .00994 | .00660 | .00465 | .07719 | .01863 | .05264 | .00410 | .00799 | .03224 | .01432 | .04690 | .06619 | .00637 | .01440 | .00424 |
| 30 Undistributed | .01029 | .00567 | .01539 | .02901 | .01582 | .07321 | .00417 | .02039 | .02751 | .05595 | .04150 | .04473 | .01034 | .01838 | .00369 |
| Total | 1.36697 | 1.08598 | 1.07407 | 1.92502 | 1.50602 | 2.13225 | 1.13836 | 1.22687 | 1.73712 | 1.42982 | 1.53538 | 1.68134 | 1.17672 | 1.26449 | 1.08104 |

APPENDIX F

TABLE XVII. TOTAL REQUIREMENTS TABLE, OMAHA SMSA, 1963 (cont.)

| 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | |
|--|-------------------|--------------------------------------|-------------------------------|-----------------------|----------------------------------|--|-----------------------------|---|-----------|------------------------------------|------------------------|-----------------------------|----------|--------------------|-------------------------------------|
| Stone, Clay, & Glass Products | Primary Metals | Fabri- cated Metal Products | Non- electric Machinery | Electric Machinery | Transpor- tation Equipment | Instru- ment & Related Products | Misc. Manufac- turing | Transpor- tation & Ware- housing | Utilities | Retail, Whole- sale Trade | Finance & Insurance | Real Estate & Rentals | Services | Undis- tributed | |
| .00062 | .00056 | .00048 | .00056 | .00101 | .00015 | .00013 | .00336 | .00178 | .00176 | .00328 | .00217 | .01500 | .00264 | .00825 | 1 Livestock & Livestock Products |
| .00107 | .00075 | .00080 | .00097 | .00178 | .00034 | .00024 | .02925 | .00256 | .00238 | .00454 | .00322 | .02281 | .00337 | .01082 | 2 Other Agricultural Products |
| .03542 | .04158 | .00963 | .00605 | .00874 | .00149 | .00043 | .00163 | .00546 | .10538 | .00430 | .00271 | .00510 | .00484 | .00297 | 3 Mining |
| .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | .00000 | 4 New Construction |
| .00333 | .00467 | .00337 | .00394 | .00627 | .00127 | .00038 | .00189 | .03625 | .03764 | .01712 | .01858 | .09273 | .02238 | .01529 | 5 Maintenance & Repair Construction |
| .00179 | .00174 | .00127 | .00139 | .00253 | .00038 | .00041 | .00348 | .00467 | .00579 | .00880 | .00243 | .00300 | .00554 | .02906 | 6 Food & Kindred Products |
| .00054 | .00054 | .00094 | .00097 | .00167 | .00106 | .00021 | .00129 | .00094 | .00027 | .00152 | .00201 | .00078 | .00538 | .00045 | 7 Apparel & Related Products |
| .00471 | .00095 | .00421 | .00250 | .00505 | .00097 | .00018 | .00202 | .00122 | .00138 | .00265 | .00089 | .00292 | .00161 | .00070 | 8 Lumber & Wood Products |
| .00033 | .00012 | .00111 | .00073 | .00912 | .00046 | .00025 | .00025 | .00068 | .00010 | .00038 | .00009 | .00021 | .00053 | .00007 | 9 Furniture & Fixtures |
| .02590 | .00329 | .00895 | .00568 | .02139 | .00160 | .00199 | .01024 | .00433 | .00389 | .01306 | .01217 | .00278 | .02107 | .00774 | 10 Paper & Allied Products |
| .00317 | .00232 | .00323 | .00308 | .00659 | .00088 | .00040 | .00227 | .00947 | .00479 | .01016 | .02753 | .00501 | .09007 | .01237 | 11 Printing & Publishing |
| .02028 | .00794 | .00971 | .00589 | .01747 | .00240 | .00214 | .00742 | .00648 | .00459 | .00661 | .00433 | .00909 | .02553 | .00299 | 12 Chemicals & Allied Products |
| .00724 | .00479 | .00538 | .00505 | .00573 | .00111 | .00037 | .00197 | .03343 | .01748 | .01056 | .00766 | .00916 | .00932 | .00284 | 13 Petroleum & Coal Products |
| .01044 | .00420 | .00639 | .01057 | .03188 | .00529 | .00122 | .02549 | .00693 | .00174 | .00423 | .00407 | .00229 | .01064 | .00099 | 14 Rubber & Plastics |
| .00008 | .00003 | .00020 | .00034 | .00056 | .00006 | .00010 | .00089 | .00012 | .00007 | .00027 | .00011 | .00010 | .00038 | .00031 | 15 Leather & Leather Goods |
| 1.05629 | .00644 | .00715 | .00704 | .02130 | .00273 | .00116 | .00170 | .00215 | .00341 | .00381 | .00117 | .00419 | .00495 | .00129 | 16 Stone, Clay & Glass Products |
| .00605 | 1.12274 | .21146 | .10907 | .13648 | .02536 | .00522 | .01266 | .00686 | .00989 | .00350 | .00218 | .00598 | .00962 | .00503 | 17 Primary Metals |
| .00820 | .01320 | 1.04337 | .03508 | .05931 | .01325 | .00267 | .00515 | .00487 | .01302 | .00489 | .00208 | .00631 | .00797 | .00393 | 18 Fabricated Metal Products |
| .00297 | .01077 | .02916 | 1.10452 | .03960 | .00985 | .00273 | .00916 | .00514 | .00285 | .00505 | .00242 | .00348 | .02100 | .00266 | 19 Nonelectric Machinery |
| .00407 | .00596 | .01299 | .04191 | 1.18407 | .00926 | .00521 | .00697 | .00992 | .00354 | .00513 | .00288 | .00392 | .02708 | .00333 | 20 Electric Machinery |
| .00154 | .00245 | .01002 | .02013 | .01374 | 1.05120 | .00186 | .01408 | .01432 | .00223 | .00691 | .00425 | .00257 | .04480 | .00344 | 21 Transportation Equipment |
| .00074 | .00054 | .00368 | .00330 | .01549 | .00201 | 1.00443 | .00175 | .00140 | .00061 | .00192 | .00109 | .00084 | .01323 | .00112 | 22 Instruments & Related Products |
| .00293 | .00131 | .00335 | .00392 | .01638 | .00541 | .00249 | 1.07649 | .00372 | .00052 | .00413 | .00443 | .00220 | .03010 | .00491 | 23 Miscellaneous Manufacturing |
| .03393 | .02645 | .02154 | .02023 | .03222 | .00627 | .00203 | .01146 | 1.05919 | .03756 | .02462 | .04088 | .01691 | .05198 | .04286 | 24 Transportation & Warehousing |
| .01998 | .01463 | .00968 | .00810 | .01361 | .00227 | .00070 | .00416 | .00788 | 1.20295 | .02742 | .01033 | .00695 | .02171 | .00709 | 25 Utilities |
| .02064 | .01993 | .02899 | .03420 | .05948 | .00829 | .00393 | .01625 | .02895 | .02152 | 1.02433 | .02017 | .02709 | .03993 | .00974 | 26 Retail & Wholesale Trade |
| .00865 | .00616 | .00871 | .00908 | .01125 | .00187 | .00083 | .00413 | .02288 | .01097 | .02627 | 1.26278 | .04216 | .02516 | .00280 | 27 Finance & Insurance |
| .00834 | .00550 | .00856 | .01171 | .01912 | .00222 | .00136 | .00497 | .03237 | .00941 | .06243 | .10672 | 1.02720 | .06015 | .00470 | 28 Real Estate & Rentals |
| .01665 | .01075 | .01701 | .02077 | .05000 | .00630 | .00316 | .01219 | .04871 | .02505 | .07591 | .07280 | .03630 | 1.08630 | .01917 | 29 Services |
| .02461 | .04275 | .02534 | .02963 | .04821 | .00796 | .00442 | .01959 | .05947 | .19071 | .04749 | .05894 | .01935 | .04772 | 1.02030 | 30 Undistributed |
| 1.33063 | 1.36319 | 1.49680 | 1.50654 | 1.84019 | 1.17187 | 1.05078 | 1.29230 | 1.42231 | 1.72164 | 1.41143 | 1.68124 | 1.37657 | 1.69214 | 1.22738 | Total |

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