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ESTIMATES OF CHANGES IN OKLAHOMA'S INPUT-OUTPUT COEFFICIENTS FROM 1963 TO 1965.

The University of Oklahoma, Ph.D, 1973
Economics, general

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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

ESTIMATES OF CHANGES IN OKLAHOMA'S INPUT-OUTPUT COEFFICIENTS FROM 1963 TO 1965

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

By

JUHO KIM

Norman, Oklahoma

1973

ESTIMATES OF CHANGES IN OKLAHOMA'S INPUT-OUTPUT

COEFFICIENTS FROM 1963 TO 1965

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ESTIMATES OF CHANGES IN OKLAHOMA'S INPUT-OUTPUT COEFFICIENTS FROM 1963 TO 1965

CHAPTER I

INTRODUCTION

Input-output analysis deals with aspects of general equilibrium in an economic system. It focuses on the question of what level of output should be produced by each industry in order to meet the total demand for that product by industries and consumers in an economy. Any industry's output is demanded by many other industries and by the final consumers. Therefore, an adequate level of output by any industry will depend upon the demand for that output by industries which use it as an input and by the final consumers.

All the complicated transactions made during a given period are arrayed in a square which shows simultaneously the industries making delivery and the industries receiving delivery. The square is called the input-output table. Therefore, each row in an input-output table indicates the sales made by one industry to every other industry, and each column reveals what each industry

purchased from every other industry. The table emphasizes the structural interdependence of the various industries in the economy.

The technical coefficients of production are concerned with production function; specifically they describe the ratio of the amount of physical output of an industry to its input.[1] Thus, it shows the productivity of a unit of input. W. W. Leontief, who initiated the interindustry flows table, assumed that technical coefficients are fixed, not changing with either output or time. He further contends that although changes in the prices of factor inputs used in the production of outputs will alter input-output coefficients, the actual range of variation in the technical coefficients was small during the period 1929-1939.[2]

If the technical coefficients were constant over time, it would be a great advantage. Thus, constancy would allow easier and more reliable prediction of future industry outputs by deriving future total outputs from short run forecast of final demands. However, if the technical coefficients were variable, it would be necessary to

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[1]Wassily W. Leontief, The Structure of American Economy, 1919-1939 (New York: Oxford University Press, 1951), pp. 33-65.

[2]Ibid., pp. 201-5.

estimate functional relationships between each industry's level of output and the quantity of the required inputs to produce the output.[3] The statistical and the computational difficulties in accomplishing the estimation of the functional relationship are complex. But the procedure would be necessary because it would be inaccurate to predict future interindustry relationships by deriving future total outputs from short run forecast of final demands.

The constancy of the technical coefficients over time cannot be decided a priori on the basis of theory. Empirical determination is required. Various empirical studies have been made by interested economists to test for constancy or variability of the technical coefficients.

This dissertation hypothesizes that the input-output coefficients change over time because of new technology, limitations of resources, and changes in the prices of factor inputs. These three influences would change relative productivity and the substitution of factor input. In turn, the changing productivity and substitution of factor input would alter not only the process of production but also the structure of the economy as well.

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[3]William J. Baumol, Economic Theory and Operations Analysis (New Jersey: Prentice-Hall, Inc., 1965), pp. 482-3.

The specific purpose of this study is to investigate empirically the variability of interindustry coefficients of Oklahoma between 1963 and 1965. This requires estimation of the input-output coefficients in the two time periods. The necessary data are the base-year input-output coefficient matrix, plus the estimating year's total amount of intermediate input and output by industry.

This thesis is conceptually separated into two parts. The first part will review theoretical issues concerning the change of coefficients over time. The second part will be an empirical study that will determine the coefficients for the economy of Oklahoma in 1965. More specifically this study will proceed as follows:

Chapter II will explain and critically evaluate various methods other than the biproportional method used to update input-output coefficients. It will explain why those methods are either biased or faced with the problem of fitting marginal constraints.

Chapter III describes the quasi-Kenderick-Jaycox method[4] used; it presents estimates both of value-added by industries and of gross state product. These are crucial data for studying and making input-output tables.

Chapter IV will deal with the biproportional method of estimating input-output coefficients. Both

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[4] J. W. Kendrick and C. M. Jaycox, "The Concept and Estimation of Gross State Product," Southern Economic Journal, Vol. 32 (October, 1965), 153-68.

the theory and the techniques of application will be presented.

Chapter V will apply the biproportional method in Oklahoma data to estimate multipliers and 1965 Oklahoma input-output coefficients. The result of the empirical study will be interpreted in terms of substitution and fabrication effects.

Chapter VI will analyze the impact of the 1965 Oklahoma import structure on the updated input-output coefficients by utilizing the purchase only location quotient method.

Chapter VII will summarize the findings and conclusions of this dissertation.

CHAPTER II

SURVEY OF STUDIES OF CONSTANCY OF COEFFICIENTS

Since Professor Leontief's input-output coefficients were characterized by an hypothesized constancy with respect to changes in output through time, many economists have performed studies to verify empirically this hypothesis. These studies will be reviewed by separating the various empirical tests into two types. The first type of the test of constancy directly compares input-output ratios observed at different times. These comparisons are sometimes made for whole matrices, but more often for selected coefficients. This kind of test is performed on the input-output coefficients derived from the exponent of the production functions that allow substitution between physical inputs.

The second type of test uses a matrix of input-output coefficients observed at one date to estimate total outputs from the final demands of another date. The total output estimated with the input-output method is next compared with corresponding various "naive" total output figures derived without using input-output methods.

Testing Constancy Hypothesis

The first type of tests were made by Saito and Watanabe to test Klein's suggestion that input-output coefficients in value terms are constant and the coefficients in quantity terms and relative prices are variable with changes in final demand.[1] Watanabe[2] tested Klein's interpretation of the invariance of input-output coefficients in value terms[3] by making cross-country comparisons of data from 15 countries. He expressed the input and output in value terms by multiplying price by total output and thereby established a Cobb-Douglas production function:

$$P_i X_i = C_i (PX) \quad i = 1,2,3, \ldots, m$$

where P represents prices of inputs, X shows the quantity of output, i shows the ith industry. To estimate the parameter C_i, the above equation is transformed into the form of a linear regression with a random disturbance term. Thus, he proved constant coefficients in value terms.

Saito tested the rest of Klein's version: "The coefficients in quantity terms and relative prices are

---

[1]L. R. Klein, "On the Interpretation of Professor Leontief's System," Review of Economic Studies, Vol. 20 (1952-53), 131-36. Also see L. R. Klein, Textbook of Econometrics (Evanston: Row, Peterson, 1953).

[2]Tsunehiko Watanabe, "A Test of the Constancy of Input-Output Coefficients among Countries," International Economic Review, Vol. 2 (September, 1961), 340-50.

[3]Klein, op. cit.

flexible in response to change in final demands."[4] He built his empirical model in accordance with the above version, and applied Japanese data. The results of his test were fairly accurate, where accuracy was tested by comparing estimated and observed values of coefficients in quantity terms and relative prices between 1960 and 1961.

Helzner[5] tested for the existence of changes in coefficients in the U.S. steel industry covering a period of nine years. He concluded that the assumption of constant-valued coefficients would lead to incorrect estimates of gross output.

Phillips[6] found that the input coefficients of the two firms in U.S. ball and roller bearing industry were constant rather than changing.

Coefficient constancy over time was also stressed by Cameron,[7] who used his production function:

$$(K_{ij} + bL_{kj}) = a_{i+k,j} X_j$$

where the two inputs, material (K) and labor (L) are

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[4]Mitsuo Saito, "An Interindustry Study of Price Formation," The Review of Economics and Statics, Vol. 53 (January, 1971), 11-20.

[5]M. L. Helzner, "A Duty of Coefficient Variation of Selected Inputs into the Steel Industry," Interindustry Item No. 48, U.S. Bureau of Mines, 1954.

[6]A. Phillips, "Stability of Technical Coefficients," Input-Output Project, University of Pennsylvania, 1953.

[7]B. Cameron, "The Production Function of Leontief Models," Review of Economic Studies, Vol. 20 (1952-53), 62-9.

assumed to be perfectly substitutable in the proportion b, and the sum of the combined i^{th} material and k^{th} labor inputs needed to produce j^{th} output has a fixed relation to output X_j. The fixed relations between input and output are designated by the coefficient ($a_{i+k,j}$). Using this production function, Cameron analyzed recorded data on inputs and outputs, in physical units, of a number of Australian manufacturing industries.

Cameron separated input-output coefficients into labor coefficients, which were the ratios of output to employment, and materials coefficients, which were the ratios of output to materials. He found that some material coefficients were approximately constant for short periods of a few years, while other material coefficients were constant for at least a decade or more. However, the employment coefficients of most industries were not constant.

Contradictory to what Klein contended, Sevaldson[8] was inclined to stress that the input coefficients in quantity terms were constant over time; however, the coefficients in value terms were not constant. He attempted to find the causes of change in input-output coefficients over time by decomposing those causes into (1) technological

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[8] P. Sevaldson, "Changes in Input-Output Coefficients," in T. Barna, ed., et al., Structural Interdependence and Economic Development (London: Macmillan, 1963), pp. 303-28.

change related to the output level of the using industry, (2) changes in prices, (3) changes in the product-mix of the using industry, and (4) observation errors. His study was made of the Norwegian Cork industry. However, the lack of data on the causes enumerated above made it impossible for him to estimate the change of input-output coefficient over time.

Tests of the second type were performed by Christ,[9] Arrow and Hoffenberg,[10] Chenery and Clark,[11] and Chenery and Watanabe.[12] Furthermore, Leontief,[13] Selma and Arrow,[14] and Christ[15] performed backward predictions with Leontief's 1939 U.S. matrix. Hoffenberg and others predicted 1950 outputs on the basis of Leontief's 1939 U.S. input-output

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[9]C. Christ, "A Review of Input-Output Analysis," Input-Output Analysis: An Appraisal, National Bureau of Economic Research, Studies in Income and Wealth, Vol. 18 (Princeton: Princeton University Press, 1955), 137-82.

[10]K. J. Arrow and M. Hoffenberg, A Time Series Analysis of Interindustry Demands (Amsterdam: North-Holland Publishing Company, 1959).

[11]H. B. Chenery and P. G. Clark, Interindustry Economics (New York: Wiley Press, 1959).

[12]H. B. Chenery and T. Watanabe, "International Comparison of the Structure of Production," Econometrica, Vol. 26 (October, 1958), 487-521.

[13]Wassily Leontief, The Structure of American Economy (New York: Oxford University Press, 1941).

[14]S. Arrow, "Comparisons of Input-Output and Alternative Projections, 1929-39," The Rand Corporation, Paper P-239 (April, 1951).

[15]Christ, op. cit., 161.

coefficient matrix,[16] and Barnett tested the predicted 1950 outputs.[17]

By using 1939 as a base year, Leontief predicted total output by industry for 1919, 1929, and 1939. He used three methods in making his predictions: (1) input-output method ($X_{29} = (I-A_{39})^{-1} f_{29}$) where 1929 total output (X_{29}) was estimated with the data of 1939 input-output coefficient matrix (A_{39}) and data of 1929 final demand (f_{29}); (2) the final demand blowup method ($X_{29} = f_{29} X_{39}/f_{39}$) where 1929 total output (X_{29}) was estimated by multiplying 1929 final demand (f_{29}) by the ratio of 1939 total output (X_{39}) and 1939 final demand (f_{39}); (3) the GNP blowup method ($X_{29} = GNP_{29} X_{39}/GNP_{39}$) where GNP represented the Gross National Products. He compared the predicted 1929 and 1919 total outputs estimated with the above three methods to the actually known total outputs for those years. Leontief had assumed that the results from the three methods would be approximately identical. But he discovered that the

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[16] In predicting 1950 output, Barnett used Cornfield, Evans, and Hoffenberg's predicted 1950 final demand figures. Also see J. Cornfield, W. D. Evans, and M. Hoffenberg, "Full Employment Patterns: 1950," Monthly Labor Review, Vol. 64 (January-June, 1947), 163-90, 420-32.

[17] H. Barnett, "Special Industry Output Projections," Long-Range Economic Projection, National Bureau of Economic Research, Studies in Income and Wealth, Vol. 16 (Princeton: Princeton University Press, 1954), 191-226.

input-output method revealed less standard error of prediction[18] than the other two methods.

By using 1937 as the base year,[19] Hoffenberg also made a backward prediction of the total outputs for 1929, 1931, 1933, 1935, and 1937. Hoffenberg found that the input-output method and the final demand blowup method yielded fairly consistent results. He did not attempt estimates by use of the GNP blowup method.

Barnett attempted to predict the 1950 total output by industry with the aid of 1950 final demand projected in 1947.[20] In addition to the three methods utilized by Leontief and Hoffenberg, Barnett used a fourth method. He constructed regressions for total output by industry on both GNP and time (1922 to 1941, and 1922 to 1946). This fourth method allowed variation in the input-output coefficients over time. The results indicated that this method was the most reliable of the four; the input-output method was next preferred; third preference was assigned to final demand blowup methods; and the GNP blowup method was the least preferred.

Constancy of coefficients was reemphasized by

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[18]The standard error of prediction is defined as the square root of the average of the squared differences between predicted and actual total outputs of all industries measured in dollar term.

[19]Christ, op. cit., 161.

[20]Barnett, op. cit.

Hatanaka,[21] who made a sophisticated test for coefficient constancy by using the 1947 U.S. matrix. He regarded the constancy of the coefficients as the most important factor for accurate forecasting with the input-output method. Hatanaka concluded that forecasting by use of the input-output method was better than by the multiple regressions method at a 25 percent significance level. This conclusion was reached by a statistical test on the differences between errors in the various predictions of each industry's gross outputs.

A recent study with Sundararajan's bridge model showed that input-output coefficients changed with changes in capacity utilization and the chase of the business cycle.[22] A notable feature of Sundararajan's model was its conversion coefficients. His equation was

$$F_{ij(t)} = g_{ij(t)}/g_{j(t)} \quad (i = 1,2,3, \ldots, m, \; j = 1,2,3, \ldots, n)$$

where t represents time; $F_{ij(t)}$ was simply the proportion of jth GNP components demand delivered by the ith industry; $g_{ij(t)}$ was amount of ith industry's output delivered to the jth GNP component; $g_{j(t)}$ showed the jth GNP components at time t. GNP components are the sum of consumption, investment,

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[21] M. Hatanaka, "The Workability of Input-Output Analysis," Fachverlag fur Wirtschaftstheorie und Okonometrie (Ludwigshafen am Rhein), 1966.

[22] V. Sundararajan, "Flexible Coefficient Bridge Model: Trend Cycle Adjustments in Input-Output Analysis" (unpublished Doctoral Dissertation, Harvard University, 1970).

government expenditure, inventory change and export by industry. Sundararajan estimated total output by industry by combining Leontief's inverse matrix. Let $F_{(t)}$ be the m by n matrix ($F_{(t)} = F_{ij(t)}$ where i = 1,2,3, ..., m, j = 1,2,3, ..., n), then $X_{(t)} = (I - A_{(t)})^{-1} F_{(t)} g_{(t)}$ where $g_{(t)}$ is a column vector of GNP components ($g_{(t)} = g_{j(t)}$ where j = 1,2,3, ..., n). He called the $(I-A_{(t)})^{-1}F_{(t)}$ the conversion coefficients ($C_{(t)}$). This simplified the equation to $X_{(t)} = C_{(t)} g_{(t)}$ where $g_{(t)}$ shows j^{th} GNP component at time t. The total output ($X_{(t)}$) is functionally related to the jth GNP components ($g_{j(t)}$) by ($C_{(t)}$).

The magnitudes of the conversion coefficients were affected by changes in the level of capacity utilization and by the business cycle. Changes in conversion coefficients in turn caused changes in either interindustry or final demands. For computational convenience, conversion coefficients were expressed in index form by taking the ratio of $X_{it} = C_{it} g_t / (\sum_t C_{it} g_{it}/12.0)$. The total output of ith industry in a certain period $X_{i(t)}$ was estimated directly by multiplying conversion indices by the vector of GNP components. With an error of less than five percent, the conversion coefficients using the linear regression method were more efficient than the other methods in forecasting cyclical change for four or five quarters. The logarithmic regression method was useful for prediction over a longer period. Lacking any alternative, Sundararajan

compared the direction of the change in conversion coefficients with that of Carter's inverse coefficients for 1958-1962.[23] He found that the directions of change were the same. Sundararajan attempted to analyze the forecast interindustry and final demands without time series data for value-added, but the accuracy of estimated input-output coefficients without values-added data was highly uncertain.

Carter[24] tested for structural change by using inverse coefficients $X = (I-A)^{-1}f$ where total amount of output (X) was equal to the product of final demand (f) and inverse coefficients $(I-A)^{-1}$ (I = identity matrix and A = input-output coefficient matrix). These inverse coefficients showed the relationships of the total output to the total intermediate output and final demand. She indicated how the total amount of interindustry demands changed as input-output coefficients change.

Furthermore, Carter derived the incremental coefficient matrix. Each 1958 input-output coefficient a_{ij}^{58} was taken as a weighted average of a 1947 input-output coefficient (a_{ij}^{47}), and a new technology coefficient (a_{ij}^{n}):

$$a_{ij}^{58} = a_{ij}^{n} s_j + a_{ij}^{47}(1 - s_j).$$

Estimate could be made of each new technology coefficient (a_{ij}^{n}) by:

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[23]Ann P. Carter, Structural Change in the American Economy (Cambridge: Harvard University Press, 1970).

[24]Carter, op. cit.

$$a_{ij}^{n} = (a_{ij}^{58} - a_{ij}^{47}(1 - s_j))/s_j$$

where s_j was the proportion of 1958 output characterized by new technology input structure in industry j in year n. This s value equalled the ratio of gross new investment over the period to gross capital assets at the end of the period and was estimated using the following equation:

$$s_j = \sum_{t=47}^{57} e_j^t / g_j^{58}$$

where t was time; e_j^t was sector j's annual expenditures on new plant and equipment; g_j^{58} was the value of its gross capital assets in 1958.

Carter also estimated the values of incremental primary factor coefficients (f_j^n) in a way similar to that used to estimate a_{ij}^n. By using simple ex post linear programming, estimates of both a_{ij}^n and f_j^n values were made. It was found that structural change (changes in input-output coefficients) were caused by discovery of labor saving technology.

The larger 1958 input-output coefficients as compared to that of 1947 was suggested by the change in the wage structure and the change in interest rate. The changes in the labor coefficients were positive and larger than that in the capital coefficients. This development implied that technological changes did affect the input-output coefficients less in degree than labor coefficients

did except in a few industries such as chemical and mining. The input-output coefficients of the chemical and mining industries experienced an alteration caused by the change in labor replacing technology, by invention, and by innovation.

Carter attempted to test the constancy of coefficients by using the data on technology, innovation, and invention. However, lack of data on changes in the technology, in innovation, and in invention, precluded accurate results. Even if the data were available, they would be inaccurate and this could bring about a negative value of the incremental coefficients in some cases. Arbitrary positive values were substituted for the negative values, producing incorrect results of the test on constancy hypothesis of input-output coefficients.

The various tests described so far estimated the total output of a future period using the information of the base year coefficients and the final demand of a future period. The estimated total output of this future period was compared with the total output estimated using naive approaches, and judgment was made upon whether or not the coefficients were changed. However, inadequacy of data on time series GNP component by industry, data on technology, invention, and innovation reduced the reliability of the studies of Sundararajan, Hatanaka, and Carter.

To meet the above shortcomings, Arrow and Hoffenberg

set up models under the assumption that the input-output coefficients are constant temporarily. But these coefficients will change due to the change in product-mix; at the same time they attempted to update coefficients on the basis of given base year input-output coefficients, and total output and final demands of the estimating year. This method therefore is revolutionary in the sense that updated coefficients are estimated. Judgments on whether or not the coefficients changed were made by directly comparing the coefficients of two different periods. This model determined causes and degrees of affect on changes of the coefficients.

Time Series Analysis

In order to confirm the constancy of coefficients over time, Tilanus used the traditional econometric method, linearly regressing individual coefficients on a time variable, and testing for significance and autocorrelation. Tilanus attempted to find a method to estimate coefficients by predicting total outputs on the basis of predicted final demands. His analysis was made in terms of the "aggregate production coefficients" obtained by dividing the amount of interindustry transaction by the total of all industries' gross output. These aggregate production coefficients made a comparison of flows of widely different sizes comparable to ordinary Leontief input-output coefficients. The aggregate

production coefficient was large at all times provided there were large corresponding flows in the economy. The regression of aggregate production coefficients on time produced results of doubtful validity because of the auto-correlation.

In 1959, Arrow and Hoffenberg *et al.* attempted to find causes affecting input-output coefficients quantitatively.[25] Because of insufficient data, they used indirect ways to reach their ends. At the time of that study, there were only four largely incompatible U.S. input-output tables published for irregular time periods. Although the pre-war tables were unreliable, their use of some explanatory variables of the input-output coefficiets was selected with some degree of freedom. The scarcity of data precluded any expectations of great accuracy. Moreover, there were no standards by which to compare the results.

Arrow and Hoffenberg put aside the problem and used Klein's approach[26] to estimate coefficients. Their study shed some light on testing the change in input-output coefficients over time by setting up the stochastic Leontief open input-output model as follows:

$$X_i = \sum_{j=1}^{n} A_{ij}X_j + f_i + u_i \qquad i = 1,2,3, \ldots, m, \; j = 1,2,3, \ldots, n \tag{1}$$

---

[25] Arrow and Hoffenberg, *op. cit.*

[26] Klein, *op. cit.*

where X_i denoted total output of ith industry and X_j represented total input of jth industry. f_i was the total final demands produced by i^{th} industry; u_i was the stochastic term of the ith industry. A_{ij} was a new input-output coefficient of ith producing and of jth using industry. Arrow and Hoffenberg assumed the equation:

$$A_{ij} = b_{ij} + c_{ij}\, t + d_{ij}\, w_t + e_{ij}\, y_t. \qquad (2)$$

Equation (2) showed that the A_{ij} was a linear function on t (time), w_t (ratio of defense expenditure to real gross national product), and y_t (real per capita personal income); b_{ij} was the constant of the ith producing and j^{th} using industry; c_{ij}, d_{ij}, and e_{ij} were parameters of time, the defense ratio, and real per capita income for the ith producing and j^{th} using industry. By substituting (2) into (1), equation (3) was derived:

$$X_{it} = \sum_{j=1}^{n} b_{ij}X_{jt} + \sum_{j=1}^{n} c_{ij}X_{jt}t + \sum_{j=1}^{n} d_{ij}X_{jt}w_t + \sum_{j=1}^{n} e_{ij}X_{jt}y_t + f_{it} + u_{it}. \qquad (3)$$

If the base year A_{ij} was $\bar{A}_{ij}$, then:

$$\bar{A}_{ij} = b_{ij} + c_{ij}\bar{t} + d_{ij}\bar{w} + e_{ij}\bar{y}. \qquad (4)$$

Equation (2) - (4) yielded:

$$A_{ijt} = \bar{A}_{ij} + c_{ij}(t-\bar{t}) + d_{ij}(w_t-\bar{w}) + e_{ij}(y_t-\bar{y}). \qquad (5)$$

By substituting (5) into (1), equation (6) was determined as:

$$X_{it} = \sum_{j=1}^{n} \bar{A}_{ij} X_{jt} + \sum_{j=1}^{n} c_{ij} X_{jt}(t-\bar{t}) + \sum_{j=1}^{n} d_{ij} X_{jt}(w_t-\bar{w})$$

$$+ \sum_{j=1}^{n} e_{ij} X_{jt}(y_t-\bar{y}) + f_{it} + u_{it}. \qquad (6)$$

By rearranging (6) it yielded:

$$X_{it} - \sum_{j=1}^{n} \bar{A}_{ij} X_{jt} - f_{it} = \sum_{j=1}^{n} c_{ij} X_{jt}(t-\bar{t}) + \sum_{j=1}^{n} d_{ij} X_{jt}(w_t-\bar{w})$$

$$+ \sum_{j=1}^{n} e_{ij} X_{jt}(y_t-\bar{y}) + u_{it}. \qquad (7)$$

Denoting the residual of the left-hand side of equation (7) by r_{it}, and abbreviating the right-hand side, equation (7) was expressed in compact form as follows:

$$r_{it} = \sum_{k=1}^{3} \sum_{j=1}^{n} C_{ijk} Y_{jkt} + u_{it} \qquad (8)$$

if $c_{ij} = C_{ij1}$, $X_{jt}(t-\bar{t}) = Y_{j1t}$

$d_{ij} = C_{ij2}$, $X_{jt}(w_t-\bar{w}) = Y_{j2t}$

$e_{ij} = C_{ij3}$, $X_{jt}(y_t-\bar{y}) = Y_{j3t}$.

If it is assumed that $A_{ij} = \bar{A}_{ij}$, then $r_{it} = u_{it}$.

$\sum_{k=1}^{3} \sum_{j=1}^{n} C_{ijk}$ should be estimated as they were the structural coefficients explaining structural change of constant $\bar{A}_{ij}$ over time. To carry on an empirical study with the above model, the most important data required were time series of X_j and f_i.

Arrow and Hoffenberg used the maximum likelihood

method for estimating $\sum_{k=1}^{3} \sum_{j=1}^{n} C_{ijk}$. This method required a set of independent predetermined variables so that the fitted equation could be identified. But they could not find such a set. As a result, some estimated relationships allowed either negative or large coefficient values.[27]

Arrow and Hoffenberg tried the equation with a linear programming that minimized a sum of deviations under restrictions on estimated input-output coefficients, but the results were unreliable. Finally, they estimated the reduced form in which constant coefficient residuals were regressed on various predetermined variables. On the assumption of a constant causal structure, these regressions allowed prediction of total output from given final demands and predetermined variables. Although the estimated regressions provided a very close fit, the unexpected structural constancy limited its usefulness for forecasting.

Although failing in its main objective, the painstaking and sophisticated study of the Arrow and Hoffenberg model has been widely used by economists for refining purposes.

In general, abstractive reduction of the various tests conducted invalidates the assumption of temporal constancy of coefficients. Regression analysis yielded the best results in measuring the change in coefficients.

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[27] M. Nerlove, "Review of a Time Series Analysis of Interindustry Demands," American Economic Review, Vol. 50 (March, 1960), 182-86.

However, the unavailability of observation of input-output coefficients on a time series basis voided the regression approach. Many quantitative economists therefore have endeavored to find alternative ways for accurate estimation of the change in coefficients over time. One alternative technique was the RAS method.

RAS Method

As a result of the various problems faced by Arrow and Hoffenberg, Stone proposed the RAS method for estimating changes in input-output coefficients over time. Following Stone's proposal, Paelinck and Waelbroeck applied the RAS method in estimating the 1959 input-output matrices of Belgium.[28] Professor Stone himself used the model to forecast gross output by industry in Britain,[29] and Schneider compared the properties of the RAS method to alternative models by updating 1947 U.S. input-output coefficients to 1958.[30] A slightly differentiated model, which adjusted the constant coefficient estimates, was applied for

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[28] J. Paelinck and J. Waebroeck, "Etude emprique sur L'evolution de coefficients 'input-output,'" Economic Appliquee, Vol. 16 (1963), 81-111.

[29] Department of Applied Economics, University of Cambridge, Input-Output Relationships 1954-66, A Program for Growth, No. 3 (London: Chapman and Hall, 1963).

[30] H. M. Schneider, "An Evaluation of Two Alternative Methods for Updating Input-Output Table" (B.A. Dissertation, Harvard College, 1965).

forecasting the interindustry matrices for Japan.[31] Paelinck and others used the approach to analyze the intercountry input-output structure of the European Economic Community.[32] With marginal data, the method was also used in estimating international trading matrices.[33]

When compared to the two classical approaches reviewed so far, conditional gross output forecasts and econometric methods, the RAS method had a special characteristic and advantage because it was not an econometric model in which random errors of specification were explicitly included. Estimation with an econometric model required the introduction of error term on the right-hand side of equation (1) and the making of appropriate changes to equations (3) and (4) above. On the other hand, the RAS method requires no such adjustment since it always can fit equation (1) exactly, subject to the nonnegativity condition of the coefficients, and subject to single observations on the total intermediate input (h_j) and output (g_i) of the time (1) [when the time of the base year was represented by time (0)] with zero errors.

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[31]Economic Planning Agency, Japan, "Econometric Models for Medium-Term Economic Plan 1964-1968," Tokyo, Japan, 1965.

[32]J. Paelinck, et al., "Etude comparee des Tableaus d'Entrees et de Sorties des Communautes Europeennes," Center d'Etudes et de Recherches Universitaire de Namur, 1966.

[33]J. Benard, "Reseau des echanges internationaux et planification ouvert," Economie Appliquee, Vol. 16 (1963), 249-76.

The row and column multipliers should be found to make relation $r_i s_j a_{ij}(0) = a_{ij}(1)$, where input-output coefficient at base year ($a_{ij}(0)$) multiplies row and column multipliers (r_i) and (s_j) equalled updated coefficient $a_{ij}(1)$. In order to estimate r_i and s_j, data on $a_{ij}(0)$ matrix and data on total intermediate input $[h_j(1)]$ and intermediate output $[g_i(1)]$ are required. The estimation of $a_{ij}(1)$ by multiplying the estimated r_i and s_j by $a_{ij}(0)$ is called the RAS method or the biproportional approach.[34] This RAS method will be used to test the hypothesis.

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[34]Michael Bacharach, "Estimating Nonnegative Matrices from Marginal Data," International Economic Review, Vol. 6 (September, 1965), 294-310. Also see Michael Bacharach, "Biproportional Matrices and Input-Output Change," Monographs 16, Department of Applied Economics, University of Cambridge (Cambridge: The University Press, 1970).

CHAPTER III

METHODOLOGY AND ESTIMATE OF GROSS STATE PRODUCT

The gross state product is the total current output of final goods and services, valued at the market prices they command, produced by a state during a given period of time. Alternatively, gross state product may be viewed as the sum of the values-added by industry in the state. The concept of gross state product will be elaborated upon further in the following section.

An important use of the gross state product is in analyzing the movements in economic aggregates and structure within a state. The availability of the measure allows comparison of the relative size and movement of production, per capita product, and productivity by industry between regions and states, and on national levels. The gross state product is particularly essential for projecting state productivity and employment. The analyses and projections are useful for state agencies that are concerned with the formulation of economic policy, and the local impact of government policies in the fields of demand and employment. Forecasts of the gross state product would be valuable to a state

government, to agencies responsible for projecting revenues, for planning expenditures because of budget allocations, and for long-run projection purposes.

The analyses and projections of state product by industry would also be useful to companies and enterprises carrying on business in the state. Based on analyses of values-added by industries and the gross state product, future demand could be projected for planning new programs and related input requirements. The companies and enterprises in the state could use projections of gross product or components and variants thereof as a basis for projecting sales in the state and the requirements of associated manpower, material, and facilities.

This chapter will investigate the methodology of estimating the values-added by industries and gross state products. The method is basically that developed by Kendrick-Jaycox,[1] but modified to take account of the differing accuracy and availability of data on Oklahoma. It essentially consists of estimates of the values-added by industry. For purposes of these estimates, the economy of the state is divided into the three sectors: private farming, private non-farming, and government. These sectors are further disaggregated following the International Standard Industrial Classification. (See Table 7.) The method of making each sector estimate will be explored.

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[1]Kendrick-Jaycox, op. cit.

Gross Product in Farm Sector

The contribution to the gross product by the private farm sector (value-added by farm industry) is calculated as follows:

$$GFT_t = TFP_t - E_t$$

$$TFP_t = M_t + C_t + RD_t + INV_t$$

$$E_t = VC_t + FC_t + MS_t.$$

For the state of Oklahoma, Table 1 states an application of the above formulae and includes an identification of symbols used. The agricultural sector is divided into two industries: (1) livestock industry; (2) crops and other industries. The values-added in the agricultural sector is divided into two industries by applying their national ratio.

Gross Product in Non-farm Sector

The non-farm sector is divided into two parts: manufacturing and other industries. The values-added by various manufacturing industries are derived from the Annual Survey of Manufacture.[2] The values-added by the remainder of the industries in the non-farm sector are estimated by the "blowup" approach[3] which assumes that the

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[2]Bureau of the Census, U.S. Department of Commerce, Annual Survey of Manufacture: 1950-1968 (Washington, D.C.: U.S. Government Printing Office).

[3]Kendrick-Jaycox, op. cit.

TABLE 1

GROSS FARM PRODUCT OF OKLAHOMA, 1965
(in millions)

Income:	
1 Cash receipts from marketings (M_t)	$778.8
2 Value of home consumption (C_t)	16.3
3 Gross rental value of dwellings (RD_t)	34.8
4 Less: Net rent to non-farm landlords	19.3
5 Net change in inventories (INV_t)	19.1
6 Value of total farm product (TFP_t) (1+2+3+5+6-4)	829.7
Expenses (E_t):	
7 Costs of raw materials (VC_t)	0.0
Feed	104.0
Livestock	93.6
Seed	9.5
Fertilizers	27.4
8 Repairs and operation of equipment (FC_t)	93.7
9 Misc. operating expenses (MS_t)	74.0
10 Total current expenses (7+8+9)	402.2
Gross Farm Product (GFT_t):(6-10)	$427.5

Source: Farm Income: State Estimates 1949-1969 (Supplement to August, 1970), p. 29.

technical structure of a state's industries is similar to that of the nation's. The blowup method is as follows:

$$p_i^t = Y_i^t + K_i^t + T_i^t$$

where i = 1,2,3, ..., m, and represents i^{th} industry at time t. p denotes values-added by industry; Y represents the state income. K and T indicate the capital consumption allowances and indirect business taxes respectively. Data

for state income or income originating by industry for the state of Oklahoma is not available. However, Oklahoma personal income by industry was used to derive Oklahoma state income.

Personal Income. Personal income is the aggregate of individual income, including the income of non-profit making institutions. An individual's income, then, is that which one may receive (1) as a wage or a salary from this work, (2) as a profit from his business, (3) as rent from his property, (4) as interest or dividends from his securities, (5) as a pension or assistance grant from the state, or (6) from a public fund before taxes on income. Personal income is often called "income received."

Some elements of personal income are not distributed to individuals at all, principally the undistributed income of business corporations. Out of the corporation's profits, a portion is distributed to shareholders, but the undistributed part of profits is retained by the corporations for investment purposes. The sum of undistributed profits and personal income before tax is called "private income before tax."

State Income. In principle, state income is net state income at factor cost. State income is the income which accrues to the residents of a state from their participation in state production. All such income is included in the state income, whether it is received by

individuals in the form of wages, dividends, interest, etc., is retained in private business, or accrues to government bodies as a consequence of their business activities. No other income is included. Interest on consumer debt, gifts, grants, and benefits, which are not received for participation in production are excluded. It does not matter where the income comes from. Most of it arises from production taking place within the state concerned, but some arises outside the state boundary and flows back to those who have provided the capital for undertakings out-of-state. In a similar way, some income that arose from production in the state flows to shareholders out of the state, and is therefore excluded from state income.

Net state income at factor cost is determined by the deduction of transfer payments and the addition of government income from property to private income before tax. The transfer payments include gifts between persons, grants from public authorities such as retirement pensions, sickness benefits, assistance grants, and family allowance. Government income from property includes undistributed profits of the public corporation.

For many purposes, it is important to have an income total which corresponds to the income arising from the productive activity that takes place within the territorial boundaries of a state, whether it accrues to

the inhabitants of that state or not. Such a total income is called "Domestic Income" and is obtained from the state income by subtracting income from productive activity received from out of the state and adding income from productive activity paid out of the state. The transactions will be discussed in the section on import and export.

The domestic income of a state provides a basis for valuing the production of a state and is called "net domestic product at factor cost." Thus, domestic income is identical to domestic product.

The money value of goods and services produced is created when products are sold. The production of those goods requires land, labor, and capital. These factors of production are called "primary inputs." They receive rewards for the services that create the first step in valuing what they produce. The sum of these rewards is "Domestic Income" which is identical to the net domestic product at factor cost and the basic valuation of what is produced in the state.

Domestic state income by industry or state income originating by industry for private non-farm sector is derived by the Kendrick-Jaycox "blowup approach" as follows:

$$Y_i^t = (A_i^t / B_i^t)\ a_i^t$$

where i = 1,2,3, ..., m; t = 1,2,3, ..., 1; Y_i^t denotes state income by industry i at time t; a is state personal income; A represents the national income; B is personal income; and t represents the time period.

Gross state domestic product at factor cost is obtained by the addition of the amount of capital consumption allowances and indirect business taxes to net domestic product at factor cost. Because it is difficult to estimate the amounts of state capital consumption allowances and state indirect business taxes by industry, state capital consumption allowances and the state indirect business taxes by industry are estimated by multiplying national ratios by state income by industry.

Capital Consumption Allowances. The amount of state capital consumption allowances by industry is estimated by multiplying the ratio of the amount of capital consumption allowances to income by industry for the nation by income by industry in the state. That is

$$K_i^t = (k_i^t / A_i^t) Y_i^t$$

where K_i^t represents the amount of state capital consumption allowances by industry of i at time t; k_i^t shows the amount of national capital consumption allowances by industry; A_i^t indicates national income by industry; Y_i^t is the state income by industry.

Indirect Business Taxes. Similar to the above approach for estimating the amount of a state's capital

consumption allowances by industry, the ratio of the amount of business taxes to the amount of income by industry for the nation is multiplied by income from each industry in a state to estimate the amount of state's indirect business taxes by industry. This relationships may be expressed as:

$$T_i^t = (s_i^t/A_i^t)\ Y_i^t$$

where s_i^t shows nation's indirect business taxes by industry of i at time t; T_i^t indicates amount of state indirect business taxes; A and Y are nation's income and state's income respectively. By using this blowup method, the estimates of 1965 Oklahoma value-added by industry in the private non-farm sector excluding manufacturing industries, were obtained and are shown in Table 2.

The net domestic product at factor cost states the value of final product from the producer's viewpoint. The net domestic product at market prices is stated from the buyer's viewpoint. Gross domestic product is more widely used than domestic product because it is impossible to calculate depreciation accurately which is required for the determination of the net figure.

If the market prices of every product produced in a year were added, the resulting total might be regarded as a measure of the total value of production in the state. This total is not a good measure because it would involve

TABLE 2*

ESTIMATES OF VALUES-ADDED BY INDUSTRY IN PRIVATE NONFARM SECTOR, OKLAHOMA, 1965

Ind. No.	Oklahoma Industry	National Totals ($ Million)			State ($ Million)		Ratio of CCA and IBT to National Income					Values-Added by Industry
		Civilian Income Received by Person (A)	Income Originating (B)	B÷A (C)	Civilian Income Received by Person (D)	Income Originating (CxD) (E)	Ratio of CCA to Nat'l Income (F)	CCA (ExF) (G)	Ratio of IBT to Nat'l Income (H)	IBT (I)	Other Adjustment (J)	V.A. (E+G+I+J) (K)
20	Other Mining	4,899	6,116	1.2484	330	411.9778	0.313	128.9490	0.101	41.6097		21.7
21	Crude Petroleum Nat'l Gas											560.8
22	Construction	26,039	29,116	1.1182	238	266.1240	0.053	14.1046	0.028	7.4515		287.7
23	Wholesale Trade	26,253	30,341	1.1557	276	318.9773	0.067	21.3715	0.245	78.1494		418.5
24	Retail Sale Trade	46,691	53,961	1.1557	491	567.4507	0.067	38.0192	0.245	139.0254		744.5
25	Banking and Finance	9,305	10,387	1.1163	102	113.8607	0.245	27.8959	0.276	81.4255		173.2
26	Insurance and Real Estate	12,436	51,470	4.1388	107	442.8503	0.245	108.4983	0.276	122.2267		673.6
27	Railroad	6,074	7,047	1.1602	40	46.4076	0.164	7.6108	0.097	4.5015		58.5
28	Highway Freight and Warehousing	6,927	10,214	1.4745	78	115.0125	0.164	18.8620	0.097	11.1562		145.0
29	Other Transportation	6,161	5,889	0.9559	85	51.2474	0.164	13.3246	0.097	7.8810		102.5
30	Telephone, Telegraph & Communication	6,337	11,241	1.7739	61	108.2059	0.235	25.4284	0.174	18.8278		152.5
31	Electricity, Gas, Public Utility	5,248	11,447	2.1812	67	146.1412	0.235	34.3432	0.174	25.4285		205.9
32	Hotel and Other Lodging Places	2,976	2,788	0.9368	22	20.6102	0.090	1.8549	0.037	0.7626		23.2
33	Personal Services and Purch Hous.	10,884	9,957	0.9148	122	111.6091	0.090	10.0445	0.037	4.1295		125.8
34	Business Repair Services	12,052	12,364	1.0259	79	81.0451	0.090	7.2941	0.037	2.9987		91.3
35	Amusement and Recreation	3,735	3,426	0.9173	22	20.1799	0.090	1.8162	0.037	0.7467		22.7
36	Professional Services	29,636	35,541	1.1993	299	358.5757	0.090	32.2718	0.037	13.2673		404.1

*Table 2 excludes the amount of values-added by manufacturing industries of the private nonfarm sector. Estimates made by "blow-up" method.

Sources of Data: (1) Data for (A) and (D), U.S. Dept. of Commerce, Office of Business Economics, Survey of Current Business, Vol. 33-50 (August, 1953-1970), pp. 9-41.
(2) Data for (B), U.S. Dept. of Commerce, Office of Business Economics, Survey of Current Business, Vol. 38-50 (July 1958-1970), pp. 8-23.
(3) Data for U.S. Capital Consumption Allowances and Indirect Business Tax, U.S. Dept of Commerce, Office of Business Economics, Survey of Current Business, Vol. 47, 48, and 50 (April, 1967, July, 1968, and 1970), pp. 21, 27, and 25.

a large amount of double accounting. In order to avoid the duplication, the value of intermediate products should be subtracted from the total value of production. The differences between the two figures are value-added.

Gross Product in Government Sector

The value-added by the government sector consists of the amount of wages and salaries plus supplements paid to federal civilian, military, state, and local government employees. It is estimated as follows:

$$G_t^r = W_t^{r1} + W_t^{r2} + W_t^{r3} + S_t^{r1} + S_t^{r2} + S_t^{r3}$$

where symbols are shown in Table 3. Due to the lack of data on supplements to the wages and salaries, supplements are derived as follows:

$$S_t^{rk} = (S_t^{uk}/W_t^{uk})\ W_t^{rk}$$

where S_t^{rk} is the amount of state supplements to wages and salaries paid to the kth employees at time t; u and r indicate U.S. and state respectively; k represents the kth employees such as federal civilian employees, military employees, and state and local employees; t shows time period. Table 3 shows the application of the above method for estimation of the gross product in the Oklahoma government sector.

Most of the value-added goes to the factors of production in the form of wages, salaries, profits, and interest. A smaller part goes to the government in indirect

TABLE 3

GROSS PRODUCT OF OKLAHOMA GOVERNMENT SECTOR
1965
(in millions)

1. Wages and Salaries to Federal Civilian (W_t^{r1})	$320.0
2. Wages and Salaries to Federal Military (W_t^{r2})	183.0
3. Wages and Salaries to State and Local (W_t^{r3}	403.0
4. Supplements to Wages and Salaries, Federal Civilian (S_t^{r1})	2.8
5. Supplements to Wages and Salaries, Federal Military (S_t^{r2})	1.6
6. Supplements to Wages and Salaries, State and Local (S_t^{r3})	3.5
7. Gross government product of Oklahoma (G_t^r)	$913.9

Source: Survey of Current Business, Vol. 48 (July, 1968), p. 23; (August, 1968), p. 19.

taxes. Any remainder goes to provide for depreciation. Thus the sum of value-added is equal to the gross domestic product at market prices. If depreciated amounts are subtracted from the value-added, net domestic product at market prices is obtained. Indirect taxes subtracted from the net domestic product will leave that part of value-added which will be distributed among the factors of production. This is the net product at factor cost and is numerically identical to state income.

Gross State Product

The gross state product is the summation of value-added by industry at time period t, when expressed in the following equation:

$$GSP_t = GFP_t + \sum_{i=1}^{m} M_i^t + \sum_{i=1}^{m} P_i^t + G_t^r$$

where GSP_t is the gross state product; GFP_t shows value-added in farm sector or gross farm products; M indicates the value-added by manufacturing industry; P represents the value-added by industry in private non-farm sector excluding manufacturing industries; G is the value-added by government sector; t indicates time period and i designates producing industry 1,2, ..., m. Table 4 shows the detailed application to Oklahoma.

Imports and Exports

Exports from and imports into the state are also included in the products. Export is accounted as income received from abroad and included in the product, and import is accounted as income paid abroad and excluded from the definitions of product. The method, estimates, and analysis of imports and exports of a state will be elaborated on in Chapter VI.

Change in Gross State Product

On an average the annual increase in Oklahoma's gross state product is smaller than that in gross national

TABLE 4

ESTIMATE OF VALUE ADDED BY INDUSTRY AND GROSS STATE PRODUCT, OKLAHOMA, 1965

Ind. No.	Sector	Industry	National Totals ($ Million) Civilian Income Received by Person (A)	Income Originating (B)	B÷A (C)	State ($ Million) Civilian Income Received by Person (D)	Income Originating (CxD) (E)	Ratio of CCA to Nat'l Income (F)	CCA (ExF) (G)	Ratio of IBT to Nat'l Income (H)	IBT (I)	Other Adjustment (J)	V.A. by Industry V.A. (E+G+I+J) (K)
	Farm												
1		Livestock										0.41	175.3
2		Crops and Others					427.5000					0.59	252.2
	Manufacturing												
3		Food and Kindred											157.0
4		Apparel											25.9
5		Lumber & Wood Products											12.1
6		Furniture & Fixture											8.7
7		Paper & Allied Products											16.3
8		Printing & Publishing											66.2
9		Chemicals & Allied Products											19.5
10		Petroleum & Allied Refining											110.8
11		Rubber											52.4
12		Leather & Leather Products											2.1
13		Stone, Clay & Glass Products											113.8
14		Primary Metal Products											46.4
15		Fabricated Metal											112.1
16		Machinery											139.2
17		Electric Machinery											87.7
18		Transportation Equipment											113.8
19		Miscellaneous Manufacturing Industries											16.5
	Non-Farm												
20		Other Mining	4,899	6,116	1.2454	330	411.9778	0.313	128.9490	0.101	41.6097		21.7
21		Crude, Petroleum Nat'l Gas											560.8

22		Construction	26,039	29,116	1.1182	238	266.1240	0.053	14.1046	0.025	7.4515	287.7
23		Wholesale Trade	26,253	30,341	1.1557	276	318.9773	0.067	21.3715	0.245	78.1494	418.5
24		Retailsale Trade	46,691	53,961	1.1557	491	567.4507	0.067	38.0192	0.245	139.0254	744.5
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26		Insurance & Real Estate	12,436	51,470	4.1388	107	442.8503	0.245	108.4983	0.276	122.2267	673.6
27		Railroad	6,074	7,047	1.1602	40	46.4076	0.164	7.6108	0.097	4.5015	58.5
28		Highway Freight & Warehousing	6,927	10,214	1.4745	78	115.0125	0.164	18.8620	0.097	11.1562	145.0
29		Other Transportation	6,161	5,889	0.9559	85	81.2474	0.164	13.3246	0.097	7.8810	102.5
30		Telephone & Telegraph & Commun.	6,337	11,241	1.7739	61	108.2059	0.235	25.4284	0.174	18.8278	152.5
31		Electricity, Gas, Public Utility	5,248	11,447	2.1812	67	146.1412	0.235	34.3432	0.174	25.4285	205.9
32		Hotel & Other Lodging Places	2,970	2,788	0.1368	22	20.6102	0.090	1.8549	0.037	0.7626	23.2
33		Personal Services & Purch. House	10,884	9,957	0.9148	122	111.6091	0.090	10.0448	0.037	4.1295	125.8
34		Business Repair Service	12,052	12,364	1.0359	79	51.0451	0.090	7.3941	0.037	2.9987	91.3
35		Amusement & Recreation	3,735	3,426	1.9173	22	20.1799	0.090	1.8162	0.037	0.7467	22.7
36		Professional Services	29,636	35,541	1.1993	299	358.5757	0.090	32.2718	0.037	13.2673	404.1
	Government											
37		Federal Civilian					322.7000					322.7
		Military					184.5000					184.5
		State and Local					406.5000					406.5
		Total Gross State Product										6,643.2
		Personal Income										5,603.0

Sources of Data: (1) Value-added of the industry 1 and 2 are from Table 1.
(2) Values-added of the industry 3-19 are from "Survey of Manufacture," issued by Department of Commerce.
(3) Values-added of the industry 20-36 are from Table 2.
(4) Values-added of the Government sector are from Table 3.

product. The smaller increase in Oklahoma's Gross State Product than in the Gross National Product is due simply to the lesser amount of economic activity in the state. Table 5 shows that for the 14 years, from 1954 to 1967, the average annual rate of increase in state income was 5.8 percent which was lower than the national average by one percentage point. Gross state product rose at a

TABLE 5

ESTIMATED OKLAHOMA GROSS STATE PRODUCT AND STATE INCOME, PERCENT CHANGE ANNUALLY, 1954-1967

Year	Gross State Product(GSP)		State Income(SI)		
	Amount (Millions)	Percent Change	Amount (Millions)	Percent	SI/GSP
1954	$3,684.70		$3,162		0.858
1955	3,967.80	7.6	3,341	5.6	0.842
1956	4,277.00	7.7	3,572	6.9	0.835
1957	4,473.30	4.5	3,730	4.4	0.833
1958	4,758.20	6.0	3.945	6.0	0.830
1959	5,542.40	16.0	4,138	4.6	0.746
1960	5,209.90	-6.0	4,305	4.0	0.826
1961	5,367.00	3.0	4.475	3.9	0.833
1962	5,573.70	3.8	4,664	4.2	0.836
1963	6,035.90	8.2	4,858	4.1	0.804
1964	6,287.40	4.1	5,220	7.4	0.830
1965	6,694.50	6.4	5,655	8.3	0.844
1966	7,257.30	8.4	6,099	7.8	0.840
1967	7,691.10	5.9	6,594	8.1	0.857
Average		5.8		5.8	0.829

Table 5 is generated from national data by using quasi-Kendrick-Jaycox's Blow up approach.

rate of 0.37 percent, less than the increase in Gross National Product which is shown in Table 6.

TABLE 6

GROSS NATIONAL PRODUCT AND NATIONAL INCOME, 1954-1967

Year	Gross National Product (GNP)		National Income (NI)		
	Amount (millions)	Percent Change	Amount (millions)	Percent Change	NI/GNP
1954	$361,200.0		$285,339.0	7.4	0.789
1955	391,700.0	8.4	306,598.0	7.7	0.782
1956	414,700.0	5.8	330,380.0	7.7	0.796
1957	442,769.0	6.7	348,724.0	5.5	0.787
1958	444,224.0	0.3	357,542.0	2.5	0.804
1959	482,056.0	8.5	380,664.0	6.4	0.789
1960	502,601.0	4.2	399,028.0	4.8	0.793
1961	518,173.0	3.0	414,954.0	3.9	0.800
1962	554,894.0	7.0	439,661.0	5.9	0.792
1963	583,900.0	5.2	461,610.0	4.9	0.790
1964	362,410.0	8.3	494,913.0	7.2	0.782
1965	683,873.0	8.1	534,816.0	8.0	0.782
1966	743,288.0	8.6	580,483.0	8.5	0.780
1967	789,663.0	6.2	625,068.0	7.6	0.791
Average		6.17		6.8	0.789

Source: Office of Business Economics, U.S. Department of Commerce, Survey of Current Business, Vol. 34-50 (July, 1954-1970), 5-20.

The average annual proportions of state income to Gross State Product was 0.829, while the average annual proportions of national income to the Gross National Product was 0.789. The percentage point differences between the two ratios is 0.04. This difference supports the assumption of the structural similarity between state and national economy.

CHAPTER IV

SOLUTION OF BIPROPORTIONAL MATRICES

The Arrow and Hoffenberg[1] study identified many problems encountered in estimating change of input-output ratios over time. Because of the random errors of specification, such problems arise in the application of complicated econometric models for estimating the coefficients. The biproportional approach can avoid the problems faced by Arrow and Hoffenberg, if the biproportional constrained matrix method is used to find the transactions matrix at time 1, the sum of whose rows and columns is equal to observed intermediate outputs $g_i(1)$ and inputs $h_i(1)$, which are related biproportionally to the initial constant coefficients estimate $a_{ij}(0)x_j(1)$ of the transactions matrix at time 1. The marginal constraints $g_i(1)$, $h_i(1)$ and the given $a_{ij}(0)x_j(1)$ matrix should not be negative by their economic nature. The biproportional constrained matrix problem is called the biproportional approach or the RAS method in this study.

There is a standard process of reaching a solution

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[1]Arrow and Hoffenberg, op. cit.

of biproportional constrained matrices. This process will be described in the following section.

The Basic RAS Model

In order to facilitate the understanding of the interindustry transactions and the basic RAS model, the transactions table is outlined in Figure 1.

FIGURE 1

TRANSACTIONS TABLE

OUTPUTS	Purchasing Industries					Intermediate Output Total	Final Demand	Total Outputs
INPUTS	1	2	3		n	g_i	f_i	x_i
	1	x_{11}	x_{12}	x_{13} ..	x_{1n}	g_1	f_1	x_1
	2	x_{21}	x_{22}	x_{23} ..	x_{2n}	g_2	f_2	x_2
Selling Industries	3	x_{31}	x_{32}	x_{33} ..	x_{3n}	g_3	f_3	x_3
	.	.	.	. ..	.	.	.	.
	m	x_{m1}	x_{m2}	x_{m3} ..	x_{mn}	g_m	f_m	x_m
Intermediate Input Total	h_j	h_1	h_2	h_3 ..	h_n			
Value Added	v_j	v_1	v_2	v_3 ..	v_n			
Total Outputs	x_j	x_1	x_2	x_3 ..	x_n			

This table represents total outputs by industry x_i, final demand f_i, intermediate output total g_i, the value added v_j. It further denotes that $a_{ij} = x_{ij}/x_j$; where i is the selling industry of i, and j is the purchasing industry of j.

Base year data are indicated by a bar on the top of each variable, e.g., the base year input-output ratio is $\bar{a}_{ij}$.

The basic RAS, or biproportional model, is as follows:

$$a_{ij} = r_i \bar{a}_{ij} s_j \tag{1}$$

$$g_i = \sum_{j=1}^{n} r_i s_j \bar{a}_{ij} x_j \tag{2}$$

$$h_j = \sum_{i=1}^{m} r_i s_j \bar{a}_{ij} x_j \tag{3}$$

where a_{ij} shows the solution of the biproportional matrices; r_i and s_j are row and column multipliers respectively, and x_j represents the total amount of input by industry.

After Leontief described equation (1),[2] Stone named the equations (2) and (3) above as the RAS model.[3] However, Bacharach later called the equations (2) and (3) biproportional matrices.[4]

Conditions for Solution of RAS Model

The diagonal matrices of Figure 1 have the vector x on its main diagonal by:

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[2]Leontief, op. cit.

[3]R. Stone, "Multiple Classifications in Social Accounting," Bulletin de l'Institut International de Statistique, Vol. 39 (1962), 215-33.

[4]Bacharach, op. cit.

$$\langle x \rangle = \begin{bmatrix} x_1 & 0 & 0 & .. & 0 \\ 0 & x_2 & 0 & .. & 0 \\ 0 & 0 & x_3 & .. & 0 \\ . & . & . & .. & . \\ . & . & . & .. & . \\ 0 & 0 & 0 & .. & x_m \end{bmatrix} .$$

Under Leontief's constant-coefficient assumption, the total output of the estimation year is multiplied by the base year input-output ratio, which can be expressed $\bar{A}\langle x \rangle$. Stone's constrained matrix approach adjusted Leontief's $\bar{A}\langle x \rangle$ so that the row and column sums become g_i and h_j respectively. The matrix adjusted to fit the constraint becomes the new matrix for the estimation year. The matrix is expressed as follows:

$$A = \begin{bmatrix} r_1 & 0 & 0 & .. & 0 \\ 0 & r_2 & 0 & .. & 0 \\ 0 & 0 & r_3 & .. & 0 \\ . & . & . & .. & . \\ . & . & . & .. & . \\ 0 & 0 & 0 & .. & r_m \end{bmatrix} \bar{A} \begin{bmatrix} s_1 & 0 & 0 & .. & 0 \\ 0 & s_2 & 0 & .. & 0 \\ 0 & 0 & s_3 & .. & 0 \\ . & . & . & .. & . \\ . & . & . & .. & . \\ 0 & 0 & 0 & .. & s_m \end{bmatrix} .$$

The constrained matrix problem must be solved to estimate the transactions matrix, which is the interior solution:

$$A\begin{bmatrix} x_1 & 0 & 0 & .. & 0 \\ 0 & x_2 & 0 & .. & 0 \\ 0 & 0 & x_3 & .. & 0 \\ . & . & . & .. & . \\ . & . & . & .. & . \\ 0 & 0 & 0 & .. & x_m \end{bmatrix} = \begin{bmatrix} r_1 & 0 & 0 & .. & 0 \\ 0 & r_2 & 0 & .. & 0 \\ 0 & 0 & r_3 & .. & 0 \\ . & . & . & .. & . \\ . & . & . & .. & . \\ 0 & 0 & 0 & .. & r_m \end{bmatrix} \bar{A} \begin{bmatrix} s_1 & 0 & 0 & .. & 0 \\ 0 & s_2 & 0 & .. & 0 \\ 0 & 0 & s_3 & .. & 0 \\ . & . & . & .. & . \\ . & . & . & .. & . \\ 0 & 0 & 0 & .. & s_m \end{bmatrix} \begin{bmatrix} x_1 & 0 & 0 & .. \\ 0 & x_2 & 0 & .. \\ 0 & 0 & x_3 & .. \\ . & . & . & .. \\ . & . & . & .. \\ 0 & 0 & 0 & .. \end{bmatrix}$$

In order to solve the above model of RAS, the following conditions (4) (6) should be met:

$$a_{ij}^{s} \geq 0 \text{ (nonnegativity)} \qquad (4)$$

$$\sum_{j=1}^{n} a_{ij}^{s} x_j = g_i \text{ (fit the constraint)} \qquad (5)$$

$$\sum_{i=1}^{m} a_{ij}^{s} x_j = h_j \text{ (fit the constraint).} \qquad (6)$$

The above conditions (4) ~ (6) can be solved satisfactorily only when

$$\sum_{j=1}^{n} a_{ij} \geq 0, \quad \sum_{i=1}^{m} a_{ij} \geq 0 \qquad (7)$$

$$g_i \geq 0, \qquad h_j \geq 0. \qquad (8)$$

The Solution Process

The method of practical solution is that each row is multiplied by r_i^L making the row sum equal the row constraint. Next each column is multiplied by s_j^L making the column sum fit the column constraint. This process will be expressed step by step as follows:

Step 1 $$r_i^1 = g_i / \sum_{j=1}^{n} \bar{a}_{ij} x_j$$

or $$g_i = \sum_{j=1}^{n} r_i^1 \bar{a}_{ij} x_j$$

Step 2 $$s_j^1 = h_j / \sum_{i=1}^{m} r_i^1 \bar{a}_{ij} x_j$$

or $$h_j = \sum_{i=1}^{m} r_i^1 \bar{a}_{ij} s_j^1 x_j$$

Define $$\bar{a}_{ij}^1 = r_i^1 \bar{a}_{ij} s_j^1$$

Step 3 $$r_i^2 = g_i / \sum_{j=1}^{n} \bar{a}_{ij}^1 x_j$$

or $$g_i = \sum_{j=1}^{n} r_i^2 \bar{a}_{ij}^1 x_j$$

Step 4 $$s_j^2 = h_j / \sum_{i=1}^{m} r_i^2 \bar{a}_{ij}^1 x_j$$

or $$h_j = \sum_{i=1}^{m} r_i^2 \bar{a}_{ij}^1 s_j^2 x_j$$

Define $$\bar{a}_{ij}^2 = r_i^2 \bar{a}_{ij}^1 s_i^2$$

Step 5 $$r_i^3 = g_i / \sum_{j=1}^{n} \bar{a}_{ij}^2 x_j$$

. .

. .

$$r_i^k = g_i / \sum_{j=1}^{n} \bar{a}_{ij}^{k-1} x_j$$

$$g_i = \sum_{j=1}^{n} r_i^k \bar{a}_{ij}^{k-1} x_j$$

$$s_j^k = h_j / \sum_{i=1}^{m} r_i^k \bar{a}_{ij}^{k-1} x_j$$

$$h_j = \sum_{i=1}^{m} r_i^k \bar{a}_{ij}^{k-1} s_j^k x_j$$

where L = 1,2,3, ..., k, i = 1,2,3, ..., m, j = 1,2,3, ..., n.

A unique solution[5] is reached as values of r_i and s_j are equal to unitary at the kth iteration. Updating the base year input-output coefficient matrix ($\bar{A}$) to obtain the estimation year's coefficient matrix, ($\overset{s}{A}$) is accomplished as follows:

$$\overset{s}{A} = R\bar{A}S$$

where $R = r^1 \cdot r^2 \cdot r^3 \ldots r^k$, and $S = s^1 \cdot s^2 \cdot s^3 \ldots s^k$. Value of R is identical with r_i which is the products of $r_i^1 x\ r_i^2 x \ldots r_i^k$, and so is for the value of S.

R., S. Values

Rows and columns of the base year matrix are multiplied by the estimated values of row and column multipliers r_i and s_j to derive an estimate of the new matrix for the given year. This process changes the input-output coefficients proportionately.

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[5]For the unique solution of RAS model, see Michael Bacharach, Biproportional Matrices and Input-Output Change, op. cit., pp. 43-59. Also see "Estimating Nonnegative Matrices from Marginal Data," International Economic Review, Vol. 6 (1965), 294-310.

The meaning of the proportional change is stated by Neisser,[6] who interpreted Leontief as "any economies occurring: (a) in a given industry; or (b) in the use of some equipment, goods, or material in production, are considered as affecting PROPORTIONATELY all coefficients of production in the industry in which the good is (a) produced, or (b) used productively. . . ."[7]

Stone, originator of the RAS method, sees the r_i as a measure of substitution tendencies between commodity inputs for i^{th} producing industry, and the s_j as a measure of upward or downward tendencies in an industry's degree of fabrication for j^{th} using industry. The r_i estimates the extent of the input i which has been substituted for other inputs or has been substituted by them during the time period from base year to estimating year. The independence of r_i from j^{th} column implies that this substitution effect is uniform over using industries, in the sense that it induces proportional changes in all industries' coefficients of input of i. The s_j is interpreted as a measure of a fabrication effect in the production of commodity j; that is, the extent to which the industry producing j^{th} commodity has decreased or increased its consumption of intermediate inputs per unit of gross output. The s_j's

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[6]H. Neisser, review of "The Structure of American Economy, 1919-1929," American Economic Review, Vol. 31 (September, 1941), 608-10

[7]Leontief, op. cit.

independence of ith row implies that this effect induces proportional changes in every one of industry j's input coefficients.

Leontief's interpretations of the r and s as a measure of productivity change, plus Stone's understanding of them as gauges of substitution and fabrication effects strengthens the case that the two causes affect input-output coefficient over time. The change of technical coefficients is attributed to a change in productivity. In turn the productivity movement is caused by two forces: changes in technology and in factor prices which induces a substitution of factor inputs. The two causal factors coincide with the interpretation of r_i and s_j between Leontief and Stone.

Thus, r_i and s_j provide important means to measure and analyze the change in the technical coefficients over time. This RAS method will be pursued in estimating Oklahoma technical coefficients in Chapter V.

CHAPTER V

THE CASE OF OKLAHOMA

Application of the RAS method to the case of Oklahoma is hampered by inadequate data. The minimum essential data are: a base year input-output coefficient matrix, value-added, final demand; and total output by industry in the estimating year. The model itself demands less data than other models in updating the input-output coefficient matrix.

All efforts have been made to utilize available data first. If the necessary data is not available, it was generated under the assumption that the economic structure of Oklahoma is identical to that of the nation. This assumption has also been set up in Chapter III, and is supported by regional economists.[1] Under this assumption, 1963 matrix of Oklahoma input-output coefficients, value-added, final demand and total output will be estimated. By applying the data for biproportional approach, the 1965 matrix of Oklahoma input-output coefficient will be estimated.

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[1]Phillip J. Bourque and Millicent Cox, "An Inventory of Regional Input-Output Studies in the United States," Occasional Paper No. 22, Graduate School of Business Administration, University of Washington, Seattle.

Data

In order to generate the 1963 Oklahoma input-output coefficient matrix from the 1963 U.S. Interindustry Transaction Table,[2] the industries in the U.S. table have been aggregated in accordance with the 1963 Oklahoma value-added by industry classification and are shown in Table 7. Column 1 in Table 7 shows all industries in Oklahoma. The 37 Oklahoma industries are numbered in order and are shown in column 2. The thirty-seventh government industry will be eliminated from input-output coefficient matrix hereon after as the industry is not interrelated to other industries. Column 3 shows U.S. industry numbers included in each Oklahoma industry. The column 4 in Table 7 shows International Standard Industry Classification (ISIC No.) number(s) included in each Oklahoma industry. When aggregating various U.S. industries for Oklahoma industries, 1963 Oklahoma input-output coefficient matrix is generated by aggregating 1963 U.S. input-output coefficient matrix, and the Oklahoma matrix is shown in Table 8.

The data on Oklahoma value-added by industry 1950-1969 are estimated by utilizing quasi-Kendrick-Jaycox method as described in Chapter III. The data are shown in Appendix I.

The data on 1965 Oklahoma final demands by industry

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[2]U.S. Department of Commerce, Office of Business Economics, Survey of Current Business, Vol. 49 (November, 1969), 30-35.

TABLE 7

AGGREGATION OF INDUSTRIES -

Oklahoma Industry	No.	U.S. Industry No.(1)	S.I.C. No.(2)
Livestock Industry	1	1	01
Crop & Others (Agr.) Industry	2	2,3,4	01,07
Food & Kindred Industry	3	14	20
Apparel Industry	4	16,17,18,19	22,23
Lumber & Wood Products Industry	5	20,21	23
Furniture & Fixture Industry	6	22,23	25
Paper & Allied Products Industry	7	24,25	26
Printing & Publishing Industry	8	26	27
Chemicals & Allied Products Industry	9	27,28,29,30	28
Petroleum & Allied Refining Industry	10	31	29
Rubber Industry	11	32	30
Leather & Leather Products Industry	12	33,34	31
Stone, Clay & Glass Products Industry	13	35,36	32
Primary Metal Products Industry	14	37,38	33
Fabricated Metal Industry	15	39,40,41,42	34
Machinery Industry	16	43 52	35
Electric Machinery Industry	17	53 58	36
Transportation Equipment Industry	18	59 61	37
Miscellaneous Manufacturing Industries	19	62 64	38,39
Other Mining Industries	20	5,6,7,9,10	10,11,12,14
Crude Petroleum Nat'l Gas Industry	21	8	13
Construction Industry	22	11,12	15,16,17
Wholesale Trade Industry	23	69	50
Retail Sale Trade Industry	24		52-59
Banking & Finance Industry	25		60,61,62,67
Insurance & Real Estate Industry	26	70,71	63-65

TABLE 7 (Continued)

Oklahoma Industry	No.	U.S. Industry No.(1)	S.I.C. No.(2)
Railroad Industry	27		40,47
Highway Freight & Warehousing Industry	28	65	41,42,44
Other Transportation Industry	29		45,46,47
Telephone & Telegraph Industry	30	66,67	48
Electricity, Gas, Public Utility Industry	31	68	49
Hotels Industry	32	72	70
Personal Services Industry	33	73,75	73,75
Business Repair Service Industry	34	76	73,75
Amusement & Recreation Industry	35	76	78,79
Professional Services Industry	36	77	80,82,84,86,89
Governments Industry	37	78,79	

(1) U.S. Industry number(s) included in Oklahoma industry. The U.S. industry number is from 1963 U.S. Interindustry Transactions Table.

(2) International Standard Industry Classification number included in Oklahoma industry.

TABLE 8

BASE YEAR INPUT-OUTPUT COEFFICIENTS, 1963

Industry	1	2	3	4	5	6	7	8	9	10
1	0.17801	0.06671	0.21956	0.0	0.0	C.0	0.0	0.0	0.00006	0.0
2	0.29595	0.02820	0.08205	0.0	0.01596	C.0	0.0	0.0	0.00072	0.0
3	0.13319	0.00007	0.17355	0.0	0.00009	C.0	0.00688	0.00086	0.01966	0.00114
4	0.0	0.0	0.00067	0.17744	0.00131	C.00150	0.00084	0.0	0.00040	0.00014
5	0.00007	0.00363	0.00131	0.0	0.31594	C.12154	0.04500	0.00172	0.00190	0.00018
6	0.0	0.0	0.00118	0.0	0.00244	C.02955	0.0	0.00111	0.0	0.0
7	0.00052	0.00015	0.02747	0.00765	0.00413	C.01503	0.26182	0.16711	0.02452	0.00746
8	0.00019	0.00033	0.00606	0.00011	0.00009	C.0	0.00806	0.11104	0.00101	0.00005
9	0.00525	0.05223	0.00757	0.02069	0.01530	C.00284	0.04343	0.02727	0.19483	0.03054
10	0.00637	0.03499	0.00283	0.00094	0.00441	C.00167	0.00789	0.00264	0.24055	0.07428
11	0.00109	0.00418	0.00342	0.00155	0.00131	C.05726	0.01097	0.00442	0.01240	0.00009
12	0.00026	0.0	0.00004	0.00311	0.00028	C.00100	0.00011	0.0	0.00014	0.00009
13	0.00022	0.00143	0.01046	0.0	0.00638	C.01369	0.00313	0.0	0.00694	0.00252
14	0.00034	0.00051	0.02149	0.0	0.00497	C.05426	0.00644	0.00055	0.02791	0.00847
15	0.00172	0.00114	0.00562	0.00100	0.01840	C.06778	0.01147	0.00154	0.00616	0.00050
16	0.00030	0.00866	0.00069	0.00055	0.00394	C.00200	0.00381	0.00252	0.00547	0.00027
17	0.00004	0.00004	0.00001	0.0	0.00009	C.00317	0.0	0.0	0.00089	0.0
18	0.00049	0.00158	0.00030	0.00006	0.00056	C.00100	0.00022	0.00061	0.00012	0.00005
19	0.00007	0.00007	0.00011	0.01964	0.00160	C.00217	0.00034	0.00184	0.00112	0.00014
20	0.00026	0.00444	0.00069	0.00011	0.00019	C.00033	0.00812	0.00006	0.02236	0.00408
21	0.0	0.0	0.0	0.0	0.0	C.0	0.0	0.0	0.00092	0.44937
22	0.00750	0.01346	0.00199	0.00083	0.00338	C.00134	0.00319	0.00160	0.00391	0.01598
23	0.01158	0.01100	0.01242	0.01265	0.00892	C.01436	0.01041	0.00805	0.01119	0.00664
24	0.02102	0.01991	0.02246	0.02291	0.01624	C.02638	0.01892	0.01456	0.02032	0.01204
25	0.00397	0.02047	0.00241	0.00399	0.00366	C.00684	0.00285	0.01468	0.00311	0.00691
26	0.01270	0.06517	0.00769	0.01287	0.01164	C.02204	0.00918	0.04680	0.00993	0.02203
27	0.00817	0.00407	0.01193	0.00216	0.01164	C.00751	0.01282	0.00399	0.00794	0.01594
28	0.01454	0.00723	0.02121	0.00383	0.02074	C.01319	0.02278	0.00712	0.01416	0.02830
29	0.00075	0.00117	0.00098	0.00161	0.00103	C.00200	0.00129	0.00442	0.00138	0.00046
30	0.00120	0.00187	0.00160	0.00266	0.00169	C.00317	0.00201	0.00725	0.00224	0.00073
31	0.00360	0.00748	0.00667	0.00355	0.00779	C.00601	0.01696	0.00522	0.02035	0.01786
32	0.0	0.0	0.00015	0.0	0.0	C.0	0.00011	0.00012	0.00012	0.00005
33	0.0	0.0	0.00222	0.00017	0.0	C.00050	0.00134	0.00160	0.00150	0.00037
34	0.00806	0.03657	0.03208	0.01376	0.01567	C.02070	0.01673	0.03298	0.05482	0.02267
35	0.0	0.0	0.0	0.0	0.0	C.0	0.0	0.0	0.0	0.0
36	0.00678	0.00048	0.00046	0.00050	0.00038	C.00050	0.00045	0.00172	0.00049	0.00014

TABLE 8 (Continued)

Industry	11	12	13	14	15	16	17	18	19	20
1	0.0	0.01297	0.0	0.0	0.0	C.0	0.0	C.0	0.0	0.0
2	0.0	0.0	0.00056	0.0	0.0	C.0	0.0	C.0	0.00154	0.0
3	0.0	0.05485	0.00032	0.00024	0.0	C.00009	0.C	0.0	0.00168	0.0
4	0.00222	0.00751	0.00112	0.00070	0.00100	C.0C092	0.00096	0.00064	0.00224	0.0
5	0.00283	0.00910	0.00697	0.00143	0.00498	0.00152	0.00107	0.00250	0.02181	0.00349
6	0.00030	0.0	0.00112	0.0	0.00170	0.00049	0.C0021	0.00362	0.00294	0.0
7	0.02164	0.01661	0.02596	0.00135	0.01218	C.00346	0.C1444	0.00166	0.03733	0.00108
8	0.00020	0.00023	0.0000E	0.00220	0.00026	C.0C020	0.C0085	0.00049	0.00615	0.0
9	0.22121	0.01957	0.03253	0.01892	0.01824	C.00512	0.C1898	0.00652	0.04460	0.02035
10	0.00212	0.00137	0.00962	0.00588	0.00332	C.0C361	0.00432	0.00214	0.00322	0.01192
11	0.04499	0.07351	0.01298	0.00092	0.00882	C.01242	0.02601	0.01682	0.04306	0.01469
12	0.00182	0.20209	0.00024	0.00017	0.00048	C.00060	0.00016	0.00003	0.00671	0.0
13	0.00991	0.00046	0.10697	0.00208	0.00860	C.0C724	0.02335	0.00779	0.00783	0.01505
14	0.00768	0.00159	0.01258	0.27759	0.28253	C.11988	0.10948	0.08446	0.06208	0.01613
15	0.01314	0.00728	0.01066	0.01817	0.06263	C.04999	0.C5581	0.05041	0.03048	0.00325
16	0.00293	0.00114	0.00873	0.01836	0.03260	C.17027	0.03689	0.04904	0.00433	0.04961
17	0.00152	0.0	0.00288	0.00523	0.01065	C.04544	0.10783	0.04285	0.01370	0.00409
18	0.00506	0.0	0.00088	0.00571	0.01706	C.02979	0.03379	0.24799	0.00671	0.00494
19	0.00657	0.01525	0.00256	0.00097	0.00209	C.0C217	0.C0283	0.00047	0.07327	0.00012
20	0.00192	0.00046	0.07700	0.06430	0.00035	0.00031	0.00053	0.00031	0.00042	0.10090
21	0.0	0.0	0.0	0.0	0.0	C.0	0.C	0.0	0.0	0.0
22	0.00273	0.00114	0.00449	0.00532	0.00148	C.0C175	0.00144	0.00153	0.00210	0.00361
23	0.01072	0.01183	0.01002	0.01062	0.00995	C.01102	0.01279	0.00883	0.01608	0.00747
24	0.01951	0.02162	0.01819	0.01926	0.C1811	C.02000	0.02319	0.01600	0.02936	0.01361
25	0.00293	0.00341	0.00345	0.00249	0.00410	C.00372	0.00304	0.00179	0.00447	0.01084
26	0.00971	0.01161	0.01122	0.00796	0.01314	C.01193	0.00981	0.00568	0.01440	0.03456
27	0.00617	0.00387	0.01707	0.00034	0.00074	C.00363	0.00474	0.00398	0.00531	0.01192
28	0.01102	0.00706	0.03037	0.00063	0.00135	C.00644	0.C0842	0.00707	0.00937	0.02119
29	0.00131	0.00159	0.00176	0.00140	0.00192	0.00180	0.C0341	0.00100	0.00196	0.01312
30	0.00202	0.00228	0.00280	0.00227	0.00310	C.00292	0.00560	0.00164	0.00322	0.02131
31	0.01072	0.00501	0.03373	0.02337	0.00825	C.00615	0.01077	0.00381	0.00545	0.01781
32	0.00010	0.0	0.0	0.00002	0.00009	C.0CC06	0.00005	0.00011	0.0	0.0
33	0.00101	0.00023	0.00048	0.00036	0.00144	C.00066	0.C0085	0.00068	0.00098	0.0
34	0.02416	0.02208	0.02356	0.01321	0.01785	C.01794	0.04712	0.01730	0.03412	0.01613
35	0.0	0.0	0.0	0.0	0.0	C.0	0.0	0.0	0.0	0.0
36	0.00051	0.00046	0.00056	0.00034	0.00061	0.00074	0.00155	0.00038	0.00070	0.00072

TABLE 8 (Continued)

Industry	21	22	23	24	25	26	27	28	29	30
1	0.0	0.0	0.0	0.0	0.0	C.01073	0.C	0.00008	0.0	0.0
2	0.0	0.00379	0.0	0.0	0.0	C.01770	0.C0220	0.00227	0.0	0.0
3	0.0	0.00034	0.00583	0.00595	0.0	0.00120	0.00333	0.00339	0.0	0.0
4	0.0	0.00049	0.00085	0.00087	0.0	C.00040	0.00035	0.00040	0.0	0.00041
5	0.06523	0.05012	0.00069	0.00073	0.0	0.00032	0.0	0.00012	0.0	0.0
6	0.0	0.00621	0.00035	0.00053	0.0	C.00009	0.0	0.0	0.0	0.0
7	0.00016	0.00332	0.01115	0.01137	0.00693	C.0C039	0.00050	0.00052	0.00066	0.00051
8	0.0	0.00004	0.00193	0.00197	0.01066	C.00095	0.C0120	0.00120	0.0	0.00020
9	0.00864	0.01607	0.00486	0.00495	0.00004	0.00371	0.00021	0.00024	0.0	0.00020
10	0.00522	0.01945	0.01112	0.01134	0.00298	C.00548	0.03875	0.03972	0.00547	0.00553
11	0.00130	0.00734	0.00263	0.00269	0.00028	0.00075	0.C0496	0.00506	0.00099	0.00102
12	0.0	0.00001	0.00018	0.00022	0.0	C.00011	0.C	0.0	0.0	0.0
13	0.00334	0.07498	0.00157	0.00161	0.0	0.00047	0.00028	0.00028	0.0	0.0
14	0.00864	0.01607	0.00074	0.00075	0.0	C.0C051	0.00616	0.00630	0.00050	0.00041
15	0.00522	0.01945	0.00230	0.00236	0.0	C.00082	0.C0276	0.00283	0.0	0.0
16	0.00408	0.01744	0.00274	0.00280	0.0	C.0C212	0.00265	0.00259	0.0	0.00010
17	0.00791	0.02349	0.00152	0.00157	0.00007	C.0C088	0.C0397	0.00406	0.01160	0.01147
18	0.00065	0.00234	0.00187	0.00192	0.00007	C.00077	0.01424	0.01466	0.00017	0.00031
19	0.0	0.00195	0.00154	0.00158	0.00011	C.0C050	C.C	0.00004	0.0	0.0
20	0.0	0.00864	0.00005	0.00008	0.0	C.0CC74	0.00028	0.00024	0.0	0.0
21	0.02422	0.0	0.00005	0.00006	0.0	C.0C089	0.00050	0.00056	0.0	0.0
22	0.03090	0.00028	0.00325	0.00332	0.00398	C.08067	0.02908	0.02984	0.02435	0.02447
23	0.00416	0.02985	0.00592	0.00637	0.00334	C.0C334	0.00942	0.00968	0.00331	0.00348
24	0.00766	0.05401	0.01152	0.01156	0.01062	C.01066	0.01679	0.01717	0.00613	0.00614
25	0.04566	0.00281	0.03160	0.03215	0.02657	C.02660	0.00680	0.00697	0.03297	0.02037
26	0.14513	0.00894	0.05716	0.05817	0.08455	C.08454	0.02168	0.02231	0.05219	0.06501
27	0.00823	0.01111	0.00272	0.00271	0.00057	C.00122	0.C2812	0.02889	0.00050	0.00041
28	0.01468	0.01975	0.00481	0.00481	0.00103	C.00216	0.C5129	0.05267	0.00066	0.00072
29	0.00897	0.01288	0.00398	0.00399	0.01144	C.0C079	0.00354	0.03626	0.05136	0.05222
30	0.01468	0.02102	0.00652	0.00652	0.01869	C.0C130	0.C0574	0.00590	0.00845	0.00829
31	0.01150	0.00346	0.01430	0.01878	0.02114	C.00198	0.C0630	0.00641	0.01077	0.01065
32	0.0	0.0	0.00014	0.00014	0.0	C.00016	0.C	0.00004	0.0	0.0
33	0.0	0.0	0.00198	0.00201	0.0	C.00219	0.C0035	0.00036	0.00017	0.00031
34	0.01223	0.04192	0.05468	0.05551	0.09226	C.02033	0.03258	0.03347	0.02734	0.02744
35	0.0	0.0	0.00071	0.00073	0.0	C.0C001	0.C	0.0	0.03844	0.03850
36	0.00041	0.00095	0.00099	0.00100	0.01272	C.0C085	0.C0113	0.00120	0.00083	0.00092

TABLE 8 (Continued)

Industry	31	32	33	34	35	36
1	0.0	0.0	0.0	0.0	0.00234	C.0CC18
2	0.0	0.0	0.0	0.0	0.0	C.0C109
3	0.00007	0.0	0.00014	0.00002	0.0	C.00911
4	0.00024	0.00399	0.00418	0.00013	0.0	C.00009
5	0.00007	0.0	0.0	0.0	0.0	C.0
6	0.0	0.0	0.0	0.0	0.0	C.0
7	0.00078	0.00499	0.00466	0.00246	0.00013	C.0C154
8	0.00007	0.00100	0.00049	0.15076	0.00611	0.01375
9	0.00192	0.02096	0.02060	0.00673	0.0	C.01806
10	0.00752	0.00998	0.00940	0.00504	0.00234	C.0C440
11	0.00020	0.00399	0.00376	0.00536	0.00026	C.00130
12	0.0	0.01098	0.01051	0.0	0.00065	C.0
13	0.00003	0.00399	0.00404	0.00410	0.0	C.0C021
14	0.00253	0.0	0.00035	0.00004	0.0	C.0
15	0.0	0.00399	0.00341	0.00464	0.0	C.0C012
16	0.00010	0.0	0.00014	0.01641	0.0	C.0C003
17	0.00084	0.03892	0.03870	0.00795	0.0	C.0C024
18	0.00020	0.00100	0.00125	0.01809	0.00013	C.00003
19	0.0	0.02096	0.02074	0.00803	0.00442	0.0C142
20	0.02158	0.0	0.00014	0.00002	0.0	C.0CC33
21	0.06568	0.0	0.0	0.00002	0.0	C.0
22	0.02997	0.00798	0.00988	0.00115	0.01052	C.02017
23	0.00027	0.00998	0.01002	0.01517	0.00611	0.0C639
24	0.00030	0.01796	0.01796	0.02698	0.01104	C.01137
25	0.00489	0.04890	0.03543	0.00434	0.00624	C.01770
26	0.00802	0.15669	0.11400	0.01382	0.02001	0.05630
27	0.00526	0.00200	0.00237	0.00122	0.00078	C.0C124
28	0.00175	0.00499	0.00425	0.00220	0.00143	C.0C226
29	0.01052	0.00299	0.00320	0.02636	0.00260	C.0C483
30	0.00438	0.00499	0.00515	0.04268	0.00442	0.0C784
31	0.18641	0.01497	0.01455	0.01122	0.01091	C.02865
32	0.0	0.00200	0.00167	0.00002	0.0	C.0C030
33	0.0	0.02395	0.02401	0.00030	0.00091	0.00413
34	0.01811	0.03493	0.03515	0.02337	0.04703	0.02452
35	0.0	0.0	0.00014	0.00244	0.19241	C.00093
36	0.00027	0.00299	0.00271	0.00122	0.00247	C.00938

are shown on the second column of Appendix II and are generated as follows: first, five columns on each row of final demand in 1963 U.S. input-output coefficient table are aggregated; second, each row of U.S. final demand by industry is aggregated for Oklahoma industry classification; third, U.S. total output by industry is aggregated for Oklahoma industry classification; fourth, the 1965 Oklahoma final demand by industry is estimated by multiplying the ratio of U.S. final demand to U.S. total output by 1965 Oklahoma total output by industry;[3] fifth and finally, the 1965 Oklahoma final demand by industry is reduced proportionately so that the aggregate of final demand is equal to the 1965 Oklahoma gross state product.

1965 Oklahoma total output by industry is estimated by multiplying the ratio of 1965 Oklahoma value-added to 1963 Oklahoma value-added by 1963 Oklahoma total output by industry. This 1965 Oklahoma total output by industry is shown on the fifth column in Table 9.

1963 Oklahoma total output by industry was estimated by input-output method under the assumption that the technical coefficients of Oklahoma (a_{ij}^{OK}) are similar to those of the U.S. economy (a_{ij}^{US}). As 1963 U.S. technical

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[3]William A. Schaffer and Kong Chu, "Nonsurvey Techniques for Constructing Interindustry Model," in Paper of the Regional Science Association, Vol. 23, p. 85.

TABLE 9

TOTAL OUTPUT BY INDUSTRY, OKLAHOMA, 1963, 1965
(in Million Dollars)

Industry	Value-Added		Total Output	
	1963 (1)	1965 (2)	1963 (3)	1965 (4) = [(3)÷(1)]X(2)
1	137.2	175.3	497.5	635.6
2	197.3	252.2	327.3	418.4
3	148.2	157.0	477.0	505.3
4	25.6	25.9	37.3	37.8
5	12.5	12.1	25.0	24.2
6	8.3	8.7	16.6	17.4
7	13.4	16.3	29.0	35.3
8	57.1	66.2	108.4	125.7
9	18.4	19.5	65.6	69.5
10	113.3	110.8	418.8	409.6
11	47.4	52.4	86.0	95.0
12	1.9	2.1	3.9	4.3
13	89.8	103.8	169.9	196.4
14	45.8	46.4	93.8	95.0
15	83.9	112.1	186.3	248.9
16	120.2	139.2	262.6	304.1
17	105.8	87.7	246.2	204.1
18	67.5	113.8	163.6	275.9
19	12.5	16.5	24.9	32.8
20	20.5	21.7	35.8	37.9
21	487.2	560.8	868.1	999.3
22	306.9	287.7	588.5	551.7
23	405.2	418.5	541.9	559.7
24	731.3	744.5	989.7	1007.6
25	165.7	173.2	239.5	250.3
26	526.2	673.6	737.1	943.5
27	64.4	58.5	91.3	83.0
28	117.5	145.0	176.9	218.3
29	82.2	102.5	113.7	141.7
30	133.1	152.5	184.6	211.5
31	194.9	205.9	310.3	327.9
32	20.6	23.2	38.1	43.0
33	214.2	125.8	358.8	210.7
34	84.8	91.3	141.9	152.7
35	20.4	22.7	30.6	34.0
36	344.2	404.1	457.7	537.3
37	781.9	913.7	781.9	913.7
	6007.3			

coefficients are available from Current Survey of Business,[4] and as Oklahoma value-added by industry (V_j^{OK}) are estimated, the total output by Oklahoma industry (X_j^{OK}) is derived as follows:

$$X_j^{US} = \sum_{i=1}^{m} a_{ij}^{US} X_j^{US} + V_j^{US} \qquad (1)$$

$$(i = 1,2,3, \ldots, m,\ i = 1,2,3, \ldots, n)$$

where X_j^{US} and V_j^{US} show the total output and value-added by Industry of the U.S. economy. Equation (2) is derived by readjusting the equation (1) as follows:

$$V_j^{US} = X_j^{US} - \sum_{i=1}^{m} a_{ij}^{US} X_j^{US}$$

$$V_j^{US} = (1 - \sum_{i=1}^{m} a_{ij}^{US}) X_j^{US}$$

$$X_j^{US} = 1/(1 - \sum_{i=1}^{m} a_{ij}^{US}) V_j^{US}.$$

Since it is assumed that $\sum_{i=1}^{m} a_{ij}^{US} = \sum_{i=1}^{m} a_{ij}^{OK}$, then

$$1/(1 - \sum_{i=1}^{m} a_{ij}^{US}) = 1/(1 - \sum_{i=1}^{m} a_{ij}^{OK}) = X_j^{US}/V_j^{US} \qquad (2)$$

therefore,

$$X_j^{OK} = (X_j^{US}/V_j^{US})\ V_j^{OK}. \qquad (3)$$

From the equation (3), 1963 Oklahoma total output by

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[4]U.S. Department of Commerce, Office of Business Economics, Survey of Current Business, Vol. 49 (November, 1969), 16-24, 25-47.

industry (X_j^{OK}) is estimated and shown on the fourth column of Table 9.

Estimation of r_i and s_j Values

The base year 1963 Oklahoma input-output coefficient matrix can be updated to 1965, by combining a limited amount of outside information, as has been mentioned above, and the mathematical adjustment provided in Chapter IV. The essence of the method is as follows:

$$r_i \bar{A} s_j x_j + f_i = x_i \quad (4)$$

$$r_i \bar{A} s_j x_j + v_j = x_j \quad (5)$$

$$r_i^L \bar{A}^{L-1} s_j^L + f_i/x_i = 1 \quad (6)$$

$$r_i^L \bar{A}^{L-1} s_j^L + v_j/x_j = 1 \quad (7)$$

$$(1 - \hat{r}_i^L \bar{A}^{L-1} \hat{s}_j^L - f_i/x_j)\ 100 = RR \quad (8)$$

$$(1 - \hat{r}_i^L \bar{A}^{L-1} \hat{s}_j^L - v_j/x_j)\ 100 = SR \quad (9)$$

where $i = 1,2,3, \ldots, n$; r is a substitution multiplier; s shows the fabrication multiplier; $\bar{A}$ represents the base-year input-output coefficient matrix, which is the 1963 U.S. coefficient matrix adjusted to Oklahoma industry; x_i is the 1965 Oklahoma total output of the ith industry; f_i shows final demand by industry; v_j is the values-added; g_i and h_i show 1965 Oklahoma intermediate output and input. RR is the row residual and SR means the column residual in percentage.

Equations (4), (5), (6), (7), (8) and (9) above are added to the initial RAS process. These six additional equations are useful when the information on the 1965 Oklahoma values-added and final demand by industry are available. Equations (8) and (9) show the size of the residuals of the estimated r_i^L values in the process of updating $\bar{A}$ to A.

The results of RAS model combining equations (4), (5), (8), and (9) are in Appendix III. The first column in Appendix III shows the number of Oklahoma industry. The second column of Appendix III shows the value of r_i^L (first iteration L=1) estimated by step 1 in Chapter IV. After this, s_j^L (first iteration L=1) value is estimated by step 2 in Chapter IV and the results of the estimate are shown on fifth column of Appendix III. Then equation (8) above is used to estimate row coefficient residual in percentage termsand is shown in column 3 of Appendix III. Also the row sumsof the coefficients is estimated by using equation (6) above and is shown on column 4. The results of equations (9) and (7) above are shown in sixth and seventh columns of Appendix III.

The process of iteration has been continued until the values of the r_i^L, s_j^L, and results of equations (6) and (7), the sums of the row and column coefficients, are unitary, and at the same time the results of equations (8) and (9) above become zero. Then $r_i^L \bar{A} s_j^L x_j = g_i$ and

$r_i^L \bar{A} s_j^L x_j = h_j$ are adjusted as shown in Table 10.

Table 10 shows the values of r_i^L and s_j^L estimated by the fiftieth iteration of the steps 1 and 2 in Chapter IV, and updated 1965 interindustry flows table. The residuals in percentage points are shown on the bottom row and last column of Table 10. Even when the values of r_i^L and s_j^L after k^{th} iteration are unitary, it is not quite final. Accuracy depends on the values of RR_i^L and SR_j^L. The smaller the residual values of RR_i^L and SR_j^L, the more accurate the results of updating 1963 coefficients to that of 1965. This really depends upon how many digits would be wanted below decimal points for the values of r_i^L and s_j^L.

The values of r_i and s_j are estimated by cumulative products of r_i^L and s_j^L (where L = 1,2,3, ..., k), that is $r_i = r_i^1 r_i^2 r_i^3, \ldots, r_i^k$ and $s_j = s_j^1 s_j^2 s_j^3, \ldots, s^k$, and are shown on first row and first column of Table 11. The updated input-output coefficient matrix $A = r_i \bar{A} s_j$ is shown in Table 11. The updated 1965 input-output coefficient matrix $A = r_i \bar{A} s_j$ in Table 11 is also estimated by interindustry flows table in Table 10: each column in Table 10 is divided by 1965 Oklahoma total output (X_j) by industry.

Substitution and Fabrication Effects

The estimated r_i and s_j values affected the technical coefficients (see Table 11). This will be analyzed in relative terms between 1963-1965 by assuming the values

TABLE 10

INTERINDUSTRY FLOWS TABLE, OKLAHOMA, 1965, WITH RAS METHOD
(in million dollars)

Industry		1	2	3	4	5	6	7	8	9	PERCENT
	S-VALUE	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8	S_9	RESIDUAL
	R-VALUE	1.00002	1.00002	1.00002	1.00002	1.00002	1.00002	1.00002	1.00002	1.00000	
1	0.99998	21C.28757	93.87543	28.65819	0.0	0.0	0.0	0.0	0.0	0.02219	-0.00134
2	0.99995	154.50526	22.12344	47.63684	0.0	1.64433	0.0	0.0	0.0	0.14848	-0.00111
3	0.99998	31.09679	0.01947	35.72154	0.0	0.00329	0.0	0.44458	0.16652	1.43731	-0.00027
4	0.99998	0.0	0.0	0.16703	8.46258	0.05795	0.03744	0.06580	0.0	0.03542	-0.00077
5	0.99995	0.00620	0.38287	0.10225	0.0	4.37621	0.94981	1.10364	0.12629	0.05268	-0.00113
6	0.99999	0.0	0.0	0.04322	0.0	0.01586	0.10835	0.0	0.03824	0.0	-0.00016
7	0.99998	0.03230	0.01110	1.50426	0.08014	0.04014	0.08240	4.50516	8.60853	0.47693	-0.00151
8	0.99998	0.05816	0.12033	1.63528	0.00568	0.00431	0.0	0.68344	28.18706	0.09681	-0.00123
9	0.99998	0.28186	3.34046	0.35829	0.18734	0.12851	0.01346	0.64590	1.21412	3.27533	-0.00086
10	0.99995	1.68572	11.03092	0.66025	0.04195	0.18258	0.03901	0.57840	0.57939	19.93300	-0.00032
11	0.99998	0.30831	1.40845	0.85281	0.07354	0.05797	1.42951	0.85955	1.03678	1.09824	-0.00124
12	0.99998	0.00686	0.0	0.00093	0.01383	0.00116	0.00233	0.00080	0.0	0.00116	-0.00036
13	0.99998	0.10717	0.82984	4.49202	0.0	0.48622	0.58862	0.42237	0.0	1.05857	-0.00172
14	0.99997	0.02599	0.04644	1.44802	0.0	0.05943	0.36606	0.13635	0.03486	0.66799	-0.00202
15	0.99998	0.82110	0.64831	2.36516	0.08051	1.37415	2.85593	1.51676	0.60968	0.92081	-0.00179
16	0.99998	0.06290	2.16292	0.12753	0.01945	0.12923	0.03701	0.22128	0.43816	0.35911	-0.00081
17	0.99998	0.00697	0.00830	0.00154	0.0	0.00245	0.04872	0.0	0.0	0.04853	-0.00076
18	0.99997	0.06750	0.25928	0.03643	0.00139	0.01207	0.01216	0.00840	0.06965	0.00518	-0.00057
19	0.99998	0.00786	0.00937	0.01089	0.37206	0.02812	0.02151	0.01058	0.17140	0.03939	-0.00065
20	0.99998	0.04736	0.96339	0.11079	0.00338	0.00541	0.00531	0.40970	0.00906	1.27524	-0.00153
21	1.00004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.99735	0.00313
22	1.00000	0.41968	0.85726	0.09817	0.00783	0.02959	0.00662	0.04945	0.07425	0.06851	-0.00002
23	0.99998	3.03104	3.42996	2.86995	0.55843	0.36527	0.33176	0.75481	1.74739	0.91715	-0.00027
24	0.99998	4.81520	5.43332	4.53582	0.88512	0.58201	0.53339	1.20057	2.76601	1.45754	-0.00025
25	0.99999	0.36058	2.21482	0.19297	0.06112	0.05201	0.05483	0.07170	1.10571	0.08845	-0.00032
26	0.99995	1.08529	6.63462	0.57536	0.18549	0.15562	0.16624	0.21722	3.31675	0.26572	-0.00018
27	0.99999	2.16548	1.28508	2.78765	0.09655	0.48267	0.17569	0.94129	0.87705	0.65900	-0.00075
28	0.99999	5.67460	3.36139	7.29755	0.25209	1.26628	0.45436	2.46274	2.30441	1.73042	-0.00075
29	0.99998	0.18273	0.33559	0.21050	0.06616	0.03926	0.04301	0.06706	0.89310	0.10528	-0.00078
30	0.99998	0.43393	0.80555	0.51006	0.16222	0.09560	0.10117	0.20134	2.17412	0.25364	-0.00075
31	0.99998	0.81210	2.01008	1.32643	0.13506	0.27492	0.11966	1.05978	0.97654	1.43742	-0.00054
32	0.99998	0.0	0.0	0.04571	0.0	0.0	0.0	0.01145	0.03741	0.01412	-0.00009
33	0.99998	0.0	0.0	0.25782	0.00378	0.0	0.00581	0.04890	0.17480	0.06188	-0.00009
34	0.99998	0.45426	2.45527	1.59388	0.13079	0.13816	0.10297	0.26119	1.54142	0.96745	-0.00078
35	0.99998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.00038
36	0.99998	1.05253	0.08877	0.06255	0.01309	0.00923	0.00685	0.01935	0.22144	0.02382	-0.00004
VALUE-ADDED		175.30	252.20	157.00	25.90	12.10	8.70	16.30	66.20	19.50	
TOTAL-OUTPUT		635.60	416.40	505.30	37.60	24.20	17.40	35.30	125.70	69.50	
PCT RESIDUAL		-0.00004	0.00002	0.00010	0.00003	0.00004	0.00004	0.00009	0.00001	0.00011	

TABLE 10 (Continued)

Industry	10	11	12	13	14	15	16	17	18	PERCENT
S-VALUE	s_{10}	s_{11}	s_{12}	s_{13}	s_{14}	s_{15}	s_{16}	s_{17}	s_{18}	RESIDUAL
R-VALUE	0.99996	1.00002	1.00002	1.00002	1.00002	1.00002	1.00002	1.00002	1.00002	
1	0.55556	C.C.	C.C	C.4C850	0.0	0.0	0.0	0.0	0.0	-0.CC134
2	0.99999	0.0	0.C	C.C	C.28184	0.0	0.0	0.0	0.0	-0.00111
3	0.99998	0.00462	0.0	0.34177	C.C5710	0.03989	0.0	0.03252	C.C	0.0	-0.00027
4	0.99998	C.C0C69	C.43558	C.C5668	0.24204	0.14093	0.44546	0.4C262	0.28282	0.27626	-0.00077
5	0.99995	C.00028	C.17385	C.C215C	C.47160	0.09014	0.69456	0.2C827	0.09869	0.33787	-0.00113
6	0.99998	0.C	0.CC865	0.0	0.03556	0.0	0.11125	0.03150	C.00905	0.22955	-0.00016
7	0.99998	C.00805	C.93268	C.02754	1.23227	0.05970	1.19177	0.33261	0.93447	0.15740	-0.00151
8	0.99998	0.00027	0.04248	0.0C188	0.01871	0.47944	0.12537	0.05474	0.27106	0.22895	-0.00123
9	0.99998	0.02847	8.24028	0.02804	1.33461	0.72318	1.54254	0.42540	1.06155	0.53432	-0.00086
10	0.99995	C.34133	C.38527	0.CC568	1.94548	1.10781	1.38398	1.47842	1.19099	C.86447	-0.00032
11	0.99999	0.00044	8.82960	0.55450	2.6C569	C.18526	3.92966	5.43665	7.66461	7.26220	-0.00124
12	0.99996	C.00004	0.03331	C.14224	0.00484	0.00319	0.01994	0.02449	0.00440	0.00121	-0.00036
13	0.99998	0.02132	3.34548	C.0C556	35.62072	0.72137	6.59921	5.45801	11.85005	5.79244	-0.00172
14	0.99997	0.01124	0.40729	0.00324	0.73481	15.10550	34.01656	14.18022	8.71777	9.85406	-0.00202
15	0.99998	C.00414	4.35232	C.C9275	3.88891	6.17542	47.09685	26.93126	27.75578	36.73300	-0.00179
16	0.99998	C.00098	0.42622	C.CC638	1.39870	2.74049	10.76666	55.24596	8.05768	15.69441	-0.00081
17	0.99998	C.0	0.18364	0.0	0.38324	0.64837	2.92125	12.24521	19.56082	11.38957	-C.00076
18	0.99997	C.00012	C.48364	C.C	0.09264	0.56000	3.70197	6.35082	4.84934	52.14572	-0.00057
19	0.99998	0.00027	0.51204	0.04571	C.21975	0.07757	0.36980	0.37721	C.33117	0.08058	-0.00065
20	0.99998	C.C1290	0.24264	0.00224	10.71783	8.33807	0.10042	0.08738	0.10057	0.08619	-0.00153
21	1.00004	297.86426	C.C	C.0	C.C	0.0	0.0	0.0	0.0	0.0	0.00313
22	1.00000	0.01553	C.10599	0.0C170	0.19200	0.21194	0.13046	0.15154	C.08395	0.13068	-0.00002
23	0.99998	C.03018	1.94686	C.08264	2.00426	1.97901	4.10256	4.46392	3.48770	3.52795	-0.00027
24	0.99998	0.04789	3.10096	C.13217	3.18433	3.14109	6.53504	7.09027	5.53437	5.59475	-0.00025
25	0.99995	0.01090	0.18465	0.00827	0.23946	0.16101	0.58660	0.52289	0.28765	0.24817	-C.00032
26	0.99995	0.03269	C.57575	C.02648	C.73275	0.48430	1.76884	1.57774	0.87340	0.74094	-0.00018
27	0.99999	0.07336	1.13467	C.C2738	3.45760	0.06416	0.30897	1.48896	1.30885	1.61024	-0.00075
28	0.99995	C.19178	2.98407	0.07353	9.05781	0.17505	0.82995	3.88960	3.42347	4.21179	-0.00075
29	0.99996	C.C0195	C.22146	C.C1C34	C.32770	0.24285	0.73690	0.67871	0.86557	0.37191	-0.00078
30	0.99998	0.00458	0.50682	0.02200	C.77375	0.58440	1.76578	1.63404	2.10962	0.90524	-0.00075
31	0.99998	C.C6996	1.67784	C.03016	5.81470	3.75325	2.93158	2.14695	2.53105	1.31189	-C.00054
32	0.99998	0.00033	0.C2608	C.C	C.C	0.00535	0.05329	0.03490	0.01958	0.06311	-0.00009
33	0.99998	C.00085	0.09232	0.0CC81	C.04832	0.03376	0.29883	0.13455	C.11666	0.13674	-0.00009
34	0.99998	C.02219	C.94477	0.03321	1.01470	0.53005	1.58468	1.56469	2.76665	1.48827	-0.00078
35	0.99998	0.0	C.C	C.0	C.C	0.0	0.0	0.0	0.0	0.0	-0.00038
36	0.99998	C.00038	0.05494	0.00191	0.06643	0.03758	0.14917	0.17779	C.25069	0.09005	-0.00004
VALUE-ADDED	110.80	52.40	2.10	103.60	46.40	112.10	139.20	87.70	113.80		
TOTAL-OUTPUT	409.60	95.00	4.30	196.40	95.00	248.90	304.10	204.10	275.90		
PCT RESIDUAL	C.C	C.00005	0.00004	-0.00002	0.00006	0.00003	0.00004	0.00003	0.00006		

TABLE 10 (Continued)

Industry		19	20	21	22	23	24	25	26	27	PERCENT
	S-VALUE	s_{19}	s_{20}	s_{21}	s_{22}	s_{23}	s_{24}	s_{25}	s_{26}	s_{27}	RESIDUAL
	K-VALUE	1.00002	1.00002	0.99997	1.00002	1.00001	1.00001	1.00002	0.99999	1.00000	
1	0.99998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.80560	0.0	-0.00134
2	0.99999	0.20383	0.0	0.0	5.55991	0.0	0.0	0.0	37.52560	0.42799	-0.00111
3	0.99998	0.07767	0.0	0.0	0.17683	5.21195	9.41347	0.0	0.90196	0.22967	-0.00027
4	0.99998	0.12543	0.0	0.0	0.30866	0.92036	1.66705	0.0	0.36414	0.02924	-0.00077
5	0.99999	0.38237	0.05844	2.58537	9.88486	0.23392	0.43796	0.0	0.09121	0.0	-0.00113
6	0.99998	0.02419	0.0	0.0	0.57467	0.05567	0.14919	0.0	0.01204	0.0	-0.00016
7	0.99998	0.45917	0.01269	0.00445	0.45938	2.65194	4.78576	0.83373	0.07799	0.00917	-0.00151
8	0.99998	0.37277	0.0	0.0	0.02727	2.26202	4.08610	6.31978	0.93614	0.10850	-0.00123
9	0.99998	0.47415	0.20662	0.20765	1.92181	0.99904	1.80075	0.00416	0.64122	0.00333	-0.00086
10	0.99999	0.16874	0.59657	0.61840	11.46571	11.26784	20.33450	1.52736	4.66864	3.02917	-0.00032
11	0.99998	2.41176	0.78580	0.16461	4.62471	2.84837	5.15579	0.19339	0.68294	0.41443	-0.00124
12	0.99998	0.03504	0.0	0.0	0.00059	0.01818	0.03932	0.0	0.00934	0.0	-0.00036
13	0.99998	0.75528	1.38643	0.72835	81.36110	2.92835	5.31436	0.0	0.73705	0.04029	-0.00172
14	0.99997	0.93959	0.23315	0.29563	2.73604	0.21657	0.38844	0.0	0.12549	0.13908	-0.00202
15	0.99998	2.88123	0.29341	1.11551	20.66231	4.20410	7.63412	0.0	1.26016	0.38920	-0.00179
16	0.99998	0.17976	1.96700	0.38293	8.14495	2.19958	3.97787	0.0	1.43087	0.15793	-0.00081
17	0.99998	0.47239	0.13469	0.61660	9.11143	1.01341	1.85246	0.02361	0.49331	0.20420	-0.00076
18	0.99997	0.18303	0.12869	0.04008	0.71805	0.98634	1.79218	0.01868	0.34147	0.57946	-0.00057
19	0.99998	1.62965	0.00255	0.0	0.46791	0.66234	1.20254	0.02393	0.18080	0.0	-0.00065
20	0.99998	0.01515	3.47556	0.0	3.50547	0.03487	0.09873	0.0	0.43391	0.01506	-0.00153
21	1.00004	0.0	0.0	413.89233	0.0	7.30845	15.52056	0.0	109.37573	5.63827	0.00313
22	1.00000	0.02327	0.03820	0.77404	0.03490	0.69635	1.25883	0.43134	14.53206	0.48068	-0.00002
23	0.99998	0.83344	0.36577	0.48745	17.40375	5.93319	11.29815	1.69319	2.81440	0.72835	-0.00027
24	0.99998	1.33176	0.56962	0.76552	27.55959	10.10455	17.94348	4.71179	7.86134	1.13612	-0.00025
25	0.99999	0.08039	0.18619	1.85648	0.56852	10.98963	19.78619	4.67396	7.77774	0.18244	-0.00032
26	0.99999	0.24368	0.55654	5.55212	1.70180	18.70309	33.68436	13.99431	23.25755	0.54729	-0.00018
27	0.99999	0.27870	0.59751	0.97652	6.55961	2.76047	4.86728	0.29261	1.04098	2.20165	-0.00075
28	0.99999	0.72413	1.56394	2.56472	17.16925	7.18782	12.72031	0.77856	2.71380	5.91297	-0.00075
29	0.99998	0.09456	0.20454	0.97835	6.99041	3.71298	6.58739	5.39842	0.61965	0.25478	-0.00078
30	0.99998	0.23056	1.45726	2.37633	16.93102	9.02749	15.97569	13.08968	1.51331	0.61313	-0.00075
31	0.99998	0.24344	0.75980	1.16128	1.73859	12.35161	28.70607	9.23617	1.43786	0.41981	-0.00054
32	0.99998	0.0	0.0	0.0	0.0	0.20149	0.35659	0.0	0.19361	0.0	-0.00009
33	0.99998	0.02556	0.0	0.0	0.0	0.99873	1.79422	0.0	0.92877	0.01362	-0.00009
34	0.99998	0.38078	0.17192	0.30856	5.26277	11.79990	21.19855	10.07076	3.68858	0.54240	-0.00078
35	0.99998	0.0	0.0	0.0	0.0	0.12099	0.22016	0.0	0.00143	0.0	-0.00038
36	0.99998	0.02152	0.02114	0.02849	0.32852	0.58049	1.05152	3.82459	0.42481	0.05182	-0.00004
VALUE-ADDED		16.50	21.70	560.80	287.70	418.50	744.50	173.20	673.60	58.50	
TOTAL-OUTPUT		32.80	37.90	999.30	551.70	559.70	1007.60	250.30	943.50	83.00	
PCT RESIDUAL		0.00005	0.00004	-0.00002	0.0	0.00001	0.00002	0.00001	0.0	0.00002	

TABLE 10 (Continued)

Industry		28	29	30	31	32	33	34	35	36	PERCENT
	S-VALUE	S28	S29	S30	S31	S32	S33	S34	S35	S36	RESIDUAL
	R-VALUE	1.00000	1.00002	1.00002	0.99996	1.00002	1.00002	1.00002	1.00002	1.00002	
1	0.99998	0.07295	0.0	0.0	0.0	0.0	0.0	0.0	1.03994	0.75798	-0.00134
2	0.99999	1.15391	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.55884	-0.00111
3	0.99998	0.61095	0.0	0.0	0.00078	0.0	0.05123	0.00282	0.0	7.58208	-0.00027
4	0.99998	0.08731	0.0	0.16432	0.00323	0.37372	1.85270	0.02218	0.0	0.09072	-0.00077
5	0.99999	0.00820	0.0	0.0	0.00029	0.0	0.0	0.0	0.0	0.0	-0.00113
6	0.99998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.00016
7	0.99998	0.02493	0.04375	0.09036	0.00230	0.10267	0.45371	0.09219	0.00304	0.34100	-0.00151
8	0.99998	0.28353	0.0	0.09732	0.00102	0.10139	0.23509	27.84001	0.70363	15.00322	-0.00123
9	0.99998	0.00995	0.0	0.01707	0.00490	0.37273	1.73346	0.21798	0.0	3.45628	-0.00086
10	0.99995	8.11367	1.54490	2.32651	0.05461	0.87480	3.89904	0.80466	0.23297	4.15070	-0.00032
11	0.99998	1.10473	0.29886	0.45866	0.00269	0.37382	1.66695	0.91466	0.02767	1.31073	-0.00124
12	0.99998	0.0	0.0	0.0	0.0	0.09552	0.43447	0.0	0.00645	0.0	-0.00036
13	0.99998	0.10528	0.0	0.0	0.00069	0.64379	3.08464	1.20489	0.0	0.36466	-0.00172
14	0.99997	0.37169	0.04079	0.04982	0.00919	0.0	0.04193	0.00184	0.0	0.0	-0.00202
15	0.99998	1.04278	0.0	0.0	0.0	0.63090	2.55150	1.33629	0.0	0.20420	-0.00179
16	0.99998	0.41915	0.0	0.03333	0.00100	0.0	0.04601	2.07561	0.0	0.02242	-0.00081
17	0.99998	0.54570	2.15575	3.17517	0.00695	2.24474	10.56252	0.83517	0.0	0.14897	-0.00076
18	0.99997	1.55879	0.02495	0.06785	0.00131	0.04563	0.26990	1.50337	0.00674	0.01473	-0.00057
19	0.99998	0.00347	0.0	0.0	0.0	0.77982	3.65142	0.54415	0.18678	0.56857	-0.00065
20	0.99998	0.03374	0.0	0.0	0.18686	0.0	0.03997	0.00220	0.0	0.21426	-0.00153
21	1.00004	16.50096	0.0	0.0	119.19864	0.0	0.0	0.46061	0.0	0.0	0.00313
22	1.00000	1.28884	1.45418	2.17680	0.07973	0.14790	0.86656	0.03882	0.22147	4.02328	-0.00002
23	0.99998	1.95573	0.92467	1.44806	0.00336	0.86525	4.11085	2.39549	0.60168	5.96217	-0.00027
24	0.99998	3.03601	1.49866	2.23602	0.00327	1.36270	6.44863	3.72863	0.95146	9.28456	-0.00025
25	0.99995	0.48865	3.19595	2.94125	0.02111	1.47108	5.04386	0.23781	0.21322	5.73065	-0.00032
26	0.99995	1.47163	4.76005	8.83217	0.03258	4.43526	15.27007	0.71251	0.64334	17.15021	-0.00018
27	0.99995	5.91070	0.14144	0.17276	0.06628	0.17558	0.98462	0.19508	0.07778	1.17155	-0.00075
28	0.99995	15.86652	0.27490	0.44672	0.03247	0.64505	2.59976	0.51759	0.20996	3.14408	-0.00075
29	0.99998	6.81935	13.35939	20.22627	0.12185	0.24130	1.22201	3.87465	0.23833	4.19492	-0.00078
30	0.99998	1.64678	3.26107	4.76564	0.07529	0.59767	2.91890	9.31088	0.60131	10.10582	-0.00075
31	0.99998	1.11610	2.59290	3.81525	1.99909	1.11850	5.14453	1.52692	0.92591	23.03758	-0.00054
32	0.99998	0.01161	0.0	0.0	0.0	0.24900	0.98390	0.00454	0.0	0.40197	-0.00009
33	0.99998	0.03661	0.02390	0.06452	0.0	1.04501	4.95768	0.02384	0.04510	1.93941	-0.00009
34	0.99998	1.45602	1.64447	2.45654	0.04852	0.65206	3.10504	0.79461	0.99720	4.92611	-0.00078
35	0.99998	0.0	1.82590	2.72407	0.0	0.0	0.00977	0.06551	3.22176	0.14755	-0.00038
36	0.99996	0.14380	0.13752	0.22706	0.00199	0.15375	0.65943	0.11426	0.14426	5.19084	-0.00004
VALUE-ADDED		145.00	102.50	152.50	205.90	23.20	125.80	91.30	22.70	404.10	
TOTAL-OUTPUT		218.30	141.70	211.50	327.90	43.00	210.70	152.70	34.00	537.30	
PCT RESIDUAL		0.00003	0.00002	0.00001	0.0	0.00004	0.0	0.00001	0.00002	0.00002	

TABLE 11

1965 INPUT-OUTPUT COEFFICIENTS ESTIMATED
WITH RAS METHOD

Industry		1	2	3	4	5	6	7	8	9
	S-VALUE	S1	S2	S3	S4	S5	S6	S7	S8	S9
	R-VALUE	0.90700	1.64130	1.00570	2.57200	3.72670	2.92420	4.52380	3.80330	2.59720
1	2.04920	0.33085	0.22437	0.46249	0.00000	0.00000	0.00000	0.00000	0.00000	0.00032
2	1.14250	0.30668	0.05288	0.09428	0.00000	0.06795	0.00000	0.00000	0.00000	0.00214
3	0.40500	0.04893	0.00005	0.07069	0.00000	0.00014	0.00000	0.01261	0.00132	0.02068
4	0.49060	0.00000	0.00000	0.00033	0.22390	0.00240	0.00215	0.00186	0.00000	0.00051
5	0.15360	0.00001	0.00092	0.00020	0.00000	0.18085	0.05459	0.03127	0.00100	0.00076
6	0.07210	0.00000	0.00000	0.00009	0.00000	0.00066	0.00623	0.00000	0.00030	0.00000
7	0.16780	0.00005	0.00003	0.00298	0.00212	0.00166	0.00474	0.12768	0.06851	0.00687
8	0.53100	0.00009	0.00029	0.00324	0.00015	0.00018	0.00000	0.01936	0.22425	0.00139
9	0.09310	0.00044	0.00798	0.00071	0.00495	0.00531	0.00077	0.01829	0.00966	0.04711
10	0.45910	0.00265	0.02637	0.00131	0.00111	0.00755	0.00224	0.01639	0.00461	0.28683
11	0.49070	0.00049	0.00337	0.00169	0.00196	0.00240	0.08216	0.02435	0.00825	0.01580
12	0.04580	0.00001	0.00000	0.00000	0.00037	0.00005	0.00013	0.00002	0.00000	0.00002
13	0.84510	0.00017	0.00198	0.00869	0.00000	0.02009	0.03383	0.01197	0.00000	0.01523
14	0.13210	0.00004	0.00011	0.00286	0.00000	0.00245	0.02096	0.00385	0.00028	0.00958
15	0.82810	0.00129	0.00155	0.00468	0.00213	0.05678	0.16413	0.04297	0.00485	0.01325
16	0.36370	0.00010	0.00517	0.00025	0.00051	0.00534	0.00213	0.00627	0.00349	0.00517
17	0.30210	0.00001	0.00002	0.00000	0.00000	0.00010	0.00280	0.00000	0.00000	0.00070
18	0.23900	0.00011	0.00062	0.00007	0.00004	0.00050	0.00070	0.00024	0.00055	0.00007
19	0.19490	0.00001	0.00002	0.00002	0.00985	0.00116	0.00124	0.00030	0.00136	0.00057
20	0.31600	0.00007	0.00230	0.00022	0.00009	0.00022	0.00030	0.01161	0.00007	0.01835
21	66.22130	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.15823
22	0.09710	0.00066	0.00215	0.00019	0.00021	0.00122	0.00038	0.00140	0.00059	0.00099
23	0.45410	0.00477	0.00820	0.00567	0.01477	0.01510	0.01907	0.02138	0.01390	0.01320
24	0.39740	0.00758	0.01299	0.00898	0.02342	0.02405	0.03066	0.03401	0.02201	0.02097
25	0.15760	0.00057	0.00529	0.00038	0.00162	0.00215	0.00315	0.00203	0.00880	0.00127
26	0.14820	0.00171	0.01585	0.00115	0.00491	0.00643	0.00955	0.00615	0.02638	0.00382
27	0.45980	0.00341	0.00307	0.00552	0.00255	0.01995	0.01010	0.02667	0.00698	0.00948
28	0.67700	0.00893	0.00803	0.01444	0.00667	0.05233	0.02611	0.06977	0.01833	0.02490
29	0.42270	0.00029	0.00081	0.00042	0.00175	0.00162	0.00247	0.00247	0.00711	0.00152
30	0.62730	0.00068	0.00193	0.00101	0.00429	0.00395	0.00581	0.00570	0.01730	0.00365
31	0.39130	0.00128	0.00480	0.00262	0.00357	0.01136	0.00688	0.03002	0.00777	0.02068
32	0.65200	0.00000	0.00000	0.00010	0.00000	0.00000	0.00000	0.00032	0.00030	0.00020
33	0.22850	0.00000	0.00000	0.00051	0.00010	0.00000	0.00033	0.00139	0.00139	0.00089
34	0.09780	0.00071	0.00587	0.00316	0.00346	0.00571	0.00592	0.00740	0.01227	0.01392
35	0.07720	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
36	0.26930	0.00166	0.00021	0.00012	0.00035	0.00038	0.00039	0.00055	0.00176	0.00034
VALUE-ADDED		175.30	252.20	157.00	25.90	12.10	8.70	16.30	66.20	19.50
TOTAL-OUTPUT		635.60	418.40	505.30	37.80	24.20	17.40	35.30	125.70	69.50

TABLE 11 (Continued)

Industry		10	11	12	13	14	15	16	17	18
	S-VALUE	S10	S11	S12	S13	S14	S15	S16	S17	S18
	R-VALUE	0.02440	4.21020	3.57770	2.24300	4.32010	3.64820	2.93350	2.94250	3.18910
1	2.04920	0.00000	0.00000	0.09509	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2	1.14250	0.00000	0.00000	0.00000	0.00144	0.00000	0.00000	0.00000	0.00000	0.00000
3	0.40300	0.00001	0.00000	0.07948	0.00029	0.00042	0.00000	0.00011	0.00000	0.00000
4	0.49060	0.00000	0.00459	0.01318	0.00123	0.00148	0.00179	0.00132	0.00139	0.00100
5	0.15360	0.00000	0.00183	0.00500	0.00240	0.00095	0.00279	0.00068	0.00048	0.00122
6	0.07210	0.00000	0.00009	0.00000	0.00018	0.00000	0.00045	0.00010	0.00004	0.00083
7	0.10780	0.00002	0.00982	0.00641	0.00628	0.00063	0.00479	0.00109	0.00458	0.00057
8	0.53100	0.00000	0.00045	0.00044	0.00010	0.00505	0.00050	0.00031	0.00133	0.00083
9	0.00310	0.00007	0.08671	0.00652	0.00679	0.00761	0.00620	0.00140	0.00520	0.00194
10	0.45910	0.00053	0.00410	0.00225	0.00991	0.01166	0.00556	0.00486	0.00584	0.00313
11	0.49070	0.00000	0.00295	0.12905	0.01429	0.00195	0.01579	0.01788	0.03756	0.02632
12	0.04580	0.00000	0.00035	0.03311	0.00002	0.00003	0.00008	0.00008	0.00002	0.00000
13	0.84510	0.00005	0.03526	0.00139	0.20277	0.00759	0.02651	0.01795	0.05806	0.02099
14	0.13210	0.00003	0.00427	0.00075	0.00373	0.15842	0.13616	0.04646	0.04256	0.03558
15	0.82810	0.00001	0.04581	0.02157	0.01980	0.06500	0.18921	0.12144	0.13599	13313
16	0.36370	0.00000	0.00449	0.00148	0.00712	0.02885	0.04326	0.18166	0.03948	0.05688
17	0.30210	0.00000	0.00193	0.00000	0.00195	0.00683	0.01174	0.04027	0.09585	0.04128
18	0.23900	0.00000	0.00509	0.00000	0.00047	0.00590	0.01487	0.02089	0.02376	0.18902
19	0.19490	0.00000	0.00539	0.01063	0.00112	0.00082	0.00149	0.00124	0.00162	0.00029
20	0.31600	0.00003	0.00255	0.00052	0.05458	0.08778	0.00040	0.00029	0.00049	0.00031
21	66.22130	0.72609	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
22	0.09710	0.00004	0.00112	0.00040	0.00098	0.00223	0.00052	0.00050	0.00041	0.00047
23	0.49410	0.00007	0.02050	0.01922	0.01021	0.02083	0.01648	0.01468	0.01709	0.01279
24	0.39740	0.00012	0.03264	0.03074	0.01621	0.03307	0.02626	0.02332	0.02712	0.02028
25	0.15760	0.00003	0.00194	0.00192	0.00122	0.00170	0.00236	0.00172	0.00141	0.00090
26	0.14820	0.00008	0.00606	0.00616	0.00373	0.00510	0.00710	0.00519	0.00428	0.00268
27	0.45980	0.00018	0.01194	0.00637	0.01760	0.00068	0.00124	0.00490	0.00641	0.00584
28	0.67700	0.00047	0.03141	0.01710	0.04612	0.00184	0.00333	0.01279	0.01677	0.01526
29	0.42270	0.00000	0.00233	0.00240	0.00167	0.00256	0.00296	0.00223	0.00424	0.00135
30	0.62730	0.00001	0.00533	0.00512	0.00394	0.00615	0.00709	0.00537	0.01034	0.00328
31	0.39130	0.00017	0.01766	0.00701	0.02960	0.03951	0.01178	0.00706	0.01240	0.00475
32	0.45200	0.00000	0.00027	0.00000	0.00000	0.00006	0.00021	0.00011	0.00010	0.00023
33	0.22850	0.00000	0.00097	0.00019	0.00025	0.00036	0.00120	0.00044	0.00057	0.00050
34	0.09780	0.00005	0.00995	0.00773	0.00517	0.00558	0.00637	0.00515	0.01356	0.00540
35	0.07720	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
36	0.26030	0.00000	0.00058	0.00044	0.00034	0.00040	0.00060	0.00058	0.00123	0.00033
VALUE-ADDED		110.80	52.40	2.10	103.80	46.40	112.10	139.20	87.70	113.80
TOTAL-OUTPUT		409.60	95.00	4.30	196.40	95.00	248.90	304.10	204.10	275.90

TABLE 11 (Continued)

Industry		19	20	21	22	23	24	25	26	27
	S-VALUE	S19	S20	S21	S22	S23	S24	S25	S26	S27
	R-VALUE	3.48010	2.87640	0.25820	2.32740	3.94360	3.87670	4.46050	1.96690	2.05150
1	2.04920	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.04325	0.00000
2	1.14250	0.00612	0.00000	0.00000	0.01008	0.00000	0.00000	0.00000	0.03978	0.00516
3	0.40500	0.00237	0.00000	0.00000	0.00032	0.00931	0.00934	0.00000	0.00096	0.00277
4	0.49060	0.00382	0.00000	0.00000	0.00056	0.00164	0.00165	0.00000	0.00039	0.00035
5	0.15360	0.01166	0.00154	0.00259	0.01792	0.00042	0.00043	0.00000	0.00010	0.00000
6	0.07210	0.00074	0.00000	0.00000	0.00104	0.00010	0.00015	0.00000	0.00001	0.00000
7	0.10780	0.01400	0.00033	0.00000	0.00083	0.00474	0.00475	0.00333	0.00008	0.00011
8	0.53100	0.01136	0.00000	0.00000	0.00005	0.00404	0.00406	0.02525	0.00099	0.00131
9	0.09310	0.01445	0.00545	0.00021	0.00348	0.00178	0.00179	0.00002	0.00068	0.00004
10	0.45910	0.00514	0.01574	0.00062	0.02078	0.02013	0.02018	0.00610	0.00495	0.03650
11	0.49070	0.07353	0.02073	0.00016	0.00838	0.00509	0.00512	0.00061	0.00072	0.00499
12	0.04380	0.00107	0.00000	0.00000	0.00000	0.00003	0.00004	0.00000	0.00001	0.00000
13	0.84510	0.02303	0.03658	0.00073	0.14748	0.00523	0.00527	0.00000	0.00078	0.00049
14	0.13210	0.02854	0.00613	0.00029	0.00494	0.00039	0.00038	0.00000	0.00013	0.00167
15	0.82810	0.08784	0.00774	0.00112	0.03749	0.00751	0.00758	0.00000	0.00134	0.00469
16	0.36370	0.00548	0.05100	0.00038	0.01476	0.00393	0.00395	0.00000	0.00152	0.00190
17	0.30210	0.01440	0.00355	0.00062	0.01652	0.00181	0.00184	0.00009	0.00052	0.00246
18	0.23900	0.00559	0.00340	0.00004	0.00130	0.00176	0.00178	0.00007	0.00036	0.00698
19	0.19490	0.04970	0.00007	0.00000	0.00088	0.00118	0.00119	0.00010	0.00019	0.00000
20	0.31600	0.00046	0.09171	0.00000	0.00635	0.00006	0.00010	0.00000	0.00046	0.00018
21	66.22130	0.00000	0.00000	0.41412	0.00000	0.01306	0.01540	0.00000	0.11592	0.06793
22	0.09710	0.00071	0.00101	0.00077	0.00006	0.00124	0.00125	0.00172	0.01541	0.00579
23	0.45410	0.02541	0.00976	0.00049	0.03155	0.01060	0.01121	0.00677	0.00298	0.00878
24	0.39740	0.04060	0.01556	0.00079	0.04995	0.01805	0.01781	0.01883	0.00833	0.01369
25	0.15760	0.00245	0.00491	0.00186	0.00103	0.01964	0.01964	0.01868	0.00825	0.00220
26	0.14920	0.00743	0.01473	0.00555	0.00308	0.03341	0.03342	0.05589	0.02464	0.00659
27	0.45980	0.00850	0.01577	0.00098	0.01189	0.00493	0.00483	0.00117	0.00110	0.02653
28	0.67700	0.02208	0.04126	0.00257	0.03112	0.01284	0.01262	0.00311	0.00288	0.07123
29	0.42270	0.00288	0.01505	0.00098	0.01267	0.00663	0.00654	0.02157	0.00066	0.00307
30	0.62730	0.00703	0.03845	0.00238	0.03069	0.01613	0.01586	0.05230	0.00160	0.00739
31	0.39130	0.00742	0.02005	0.00116	0.00315	0.02207	0.02849	0.03690	0.00152	0.00506
32	0.65200	0.00000	0.00000	0.00000	0.00000	0.00036	0.00035	0.00000	0.00021	0.00000
33	0.22850	0.00078	0.00000	0.00000	0.00000	0.00178	0.00178	0.00000	0.00098	0.00016
34	0.09780	0.01161	0.00454	0.00031	0.00954	0.02109	0.02105	0.04025	0.00391	0.00654
35	0.07720	0.00000	0.00000	0.00000	0.00000	0.00022	0.00022	0.00000	0.00000	0.00000
36	0.26930	0.00066	0.00056	0.00003	0.00060	0.00105	0.00104	0.01528	0.00045	0.00062
VALUE-ADDED		16.50	21.70	560.80	287.70	418.50	744.50	173.20	673.60	58.50
TOTAL-OUTPUT		32.80	37.90	999.30	551.70	559.70	1007.60	250.30	943.50	83.00

TABLE 11 (Continued)

Industry		28	29	30	31	32	33	34	35	36
	S-VALUE	s_{28}	s_{29}	s_{30}	s_{31}	s_{32}	s_{33}	s_{34}	s_{35}	s_{36}
	R-VALUE	2.03830	4.34190	4.33300	0.08360	4.44050	4.28830	2.27750	6.37850	3.82430
1	2.04920	0.00033	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.03059	0.00141
2	1.14250	0.00529	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00476
3	0.40500	0.00280	0.00000	0.00000	0.00000	0.00000	0.00024	0.00002	0.00000	0.01411
4	0.49060	0.00040	0.00000	0.00087	0.00001	0.00869	0.00879	0.00015	0.00000	0.00017
5	0.15360	0.00004	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
6	0.07210	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
7	0.10780	0.00011	0.00031	0.00024	0.00001	0.00239	0.00215	0.00060	0.00009	0.00063
8	0.53100	0.00130	0.00000	0.00046	0.00000	0.00236	0.00112	0.18232	0.02069	0.02792
9	0.09310	0.00005	0.00000	0.00008	0.00001	0.00867	0.00822	0.00143	0.00000	0.00643
10	0.45010	0.03717	0.01090	0.01100	0.00029	0.02035	0.01851	0.00527	0.00685	0.00773
11	0.49070	0.00506	0.00211	0.00217	0.00001	0.00869	0.00791	0.00599	0.00081	0.00244
12	0.04580	0.00000	0.00000	0.00000	0.00000	0.00223	0.00206	0.00000	0.00019	0.00000
13	0.84510	0.00048	0.00000	0.00000	0.00000	0.01497	0.01464	0.00789	0.00000	0.00068
14	0.13210	0.00170	0.00029	0.00023	0.00003	0.00000	0.00020	0.00001	0.00000	0.00000
15	0.82810	0.00478	0.00000	0.00000	0.00000	0.01467	0.01211	0.00875	0.00000	0.00038
16	0.36370	0.00192	0.00000	0.00016	0.00000	0.00000	0.00022	0.01359	0.00000	0.00004
17	0.30210	0.00250	0.01522	0.01501	0.00002	0.05221	0.05014	0.00547	0.00000	0.00028
18	0.23900	0.00714	0.00018	0.00032	0.00000	0.00106	0.00128	0.00985	0.00020	0.00003
19	0.19490	0.00002	0.00000	0.00000	0.00000	0.01814	0.01733	0.00356	0.00549	0.00106
20	0.31600	0.00015	0.00000	0.00000	0.00057	0.00000	0.00019	0.00001	0.00000	0.00040
21	66.22130	0.07559	0.00000	0.00000	0.36361	0.00000	0.00000	0.00302	0.00000	0.00000
22	0.09710	0.00591	0.01027	0.01030	0.00024	0.00344	0.00411	0.00025	0.00652	0.00749
23	0.45410	0.00896	0.00653	0.00685	0.00001	0.02012	0.01951	0.01569	0.01770	0.01110
24	0.39740	0.01391	0.01058	0.01057	0.00001	0.03169	0.03061	0.02442	0.02798	0.01728
25	0.15760	0.00224	0.02256	0.01391	0.00006	0.03422	0.02394	0.00156	0.00627	0.01067
26	0.14820	0.00674	0.03354	0.04175	0.00010	0.10311	0.07245	0.00466	0.01892	0.03191
27	0.45980	0.02708	0.00100	0.00082	0.00020	0.00408	0.00467	0.00128	0.00229	0.00218
28	0.67700	0.07268	0.00194	0.00211	0.00010	0.01500	0.01234	0.00339	0.00618	0.00585
29	0.42270	0.03124	0.09426	0.09564	0.00037	0.00561	0.00580	0.02538	0.00701	0.00781
30	0.62730	0.00754	0.02302	0.02233	0.00023	0.01390	0.01385	0.06098	0.01769	0.01881
31	0.39130	0.00511	0.01830	0.01806	0.00610	0.02601	0.02442	0.01000	0.02723	0.04287
32	0.63200	0.00005	0.00000	0.00000	0.00000	0.00579	0.00467	0.00003	0.00000	0.00075
33	0.22850	0.00017	0.00017	0.00031	0.00000	0.02430	0.02353	0.00016	0.00133	0.00361
34	0.09780	0.00667	0.01161	0.01163	0.00015	0.01517	0.01474	0.00521	0.02934	0.00917
35	0.07720	0.00000	0.01288	0.01288	0.00000	0.00000	0.00005	0.00043	0.09475	0.00027
36	0.26930	0.00066	0.00097	0.00107	0.00001	0.00358	0.00313	0.00075	0.00424	0.00966
VALUE-ADDED		-145.00	102.50	152.50	205.90	23.20	125.80	91.30	22.70	404.10
TOTAL-OUTPUT		218.30	141.70	211.50	327.90	43.00	210.70	152.70	34.00	537.30

of r_i and s_j for 1963 base year were unitary. For the livestock industry--no. 1 in the table--during the period from 1963 and 1965, the degree of substitution as measured by the r value was 2.0492. The livestock industry used its own livestock as an input at the degree of 2.0492, replacing the other inputs. This substitution effect influenced all the using industries' coefficients proportionately. The industries, such as crops and other agricultures, foods and kindred, chemical and allied products, leather and leather products, insurance and real estate, highway freight and warehousing, recreational and professional services used more livestock replacing use of other inputs than livestock at the uniform rate of 2.0492. Accordingly, the coefficients of all those industries who used livestock were induced to change proportionately.

The high substitution effect was offset by a low fabrication effect of 0.90700. The first industry producing livestock decreased its consumption of intermediate inputs per units of gross output. The goods consumed as intermediate inputs were crops and other agricultural products, food and kindred, wholesale and retail sales, railroads, highway freight and warehousing, and professional services, including livestock itself. This reducing tendency from the unitary fabrication effect of 1963 brought about the uniform change over the coefficients of each producing industry.

A combination of both effects changed the input-output coefficient $\bar{a}_{1.1} = 0.17801$ to $a_{1.1} = 0.33085$. The principal cause of the increase in the technical coefficient for the livestock industry was a high substitution effect.

The substitution effect for crops and other agricultural industry was 1.1425 in 1965. This implies that livestock, food and kindred, lumber and wood products, chemicals and allied products, stone, clay and glass products, miscellaneous manufacturing, construction, insurance and real estate, railroads, highway freight and warehousing, and professional services (including its own crops and other agricultural industries) had uniformly increased the use of crops and other agricultures. At the same time, the 1965 degree of fabrication was 1.6423. All the industries except 4, 6, 12, 21, 32, 33 and 35 proportionately increased the consumption of crops and other agricultures as an input per unit of gross output. The combination of the positive substitution and fabrication effects increased the technical coefficient from $\bar{a}_{2.2} = 0.02820$ to $a_{2.2} = 0.05288$.

The substitution effect for the food and kindred industry was 0.4050. All the industries besides the following 14 industries (4, 6, 11, 15, 17, 18, 20, 21, 25, 29, 30, 31, 32, 35) reduced the use of food and kindred, and substituted other inputs. The decrease in substitution effect was partially offset by the increase in fabrication

effect, which was 1.0057 and exhibited increase from 1963 to 1965. Except for the leather and leather product, electric machinery, and amusement and recreation industries, all the industries uniformly increased the consumption of food and kindred as their input per unit of gross output. The large reduction in the substitution effect reduced the input-output coefficient from $\bar{a}_{3.3} = 0.17355$ to $a_{3.3} = 0.07069$ during the two year period from 1963 to 1965.

The low substitution effect for the apparel industry was offset by the high fabrication effect. All the industries, except livestock, crop and other agricultures, printing and publishing, petroleum and allied refining, other mining, crude petroleum and natural gas, banking and finance, other transportation, and amusement and recreation, reduced the use of apparel proportionately by 0.49060. However, the increase in fabrication effect by 2.57200 raised the input-output coefficient from $\bar{a}_{4.4} = 0.17744$ to $\bar{a}_{4.4} = 0.22390$, during 1963-1965.

Similar to the apparel industry, a small substitution effect for the lumber and wood producing industry was offset by the large fabrication effect. The combination of both effects reduced the coefficients of the industry from 0.31594 to 0.18085. In this case, the r_5 value was 0.15360 and s_j value was 3.72670.

The change in the substitution effect for the furniture and fixture industry between 1963-1965 was negligible,

as indicated in Table 11 in which the industry number was in the first column. The values of substitution effect r_i and fabrication effect s_j were shown in the second row and column of Table 11 respectively. However, the reduced input-output coefficient for the industry was offset by a great degree of fabrication effect. But still the input-output coefficient for the industry $a_{6.6} = 0.00623$ was smaller than the base year $\bar{a}_{6.6} = 0.02955$ value.

The input-output coefficient for the paper and allied product industry was reduced from 0.26182 to 0.12768, because of the small substitution effect. The large fabrication effect $s_7 = 4.5238$ was not great enough to offset the value of reduction of the coefficient.

The combination of the substitution and fabrication effects increased the input-output coefficient of the printing and publishing industry. This was caused by the small substitution effect $r_8 = 0.5310$, which was offset completely by the large fabrication effect $s_8 = 3.8033$; yet the coefficient decreased from $\bar{a}_{8.8} = 0.22425$ to $a_{8.8} = 0.1104$ during 1963-1965.

The low substitution effect for the chemicals and allied products industry was offset by the high fabrication effect, and $a_{9.9} = 0.04711$ was less than $\bar{a}_{9.9} = 0.19483$ of the base year 1963.

The petroleum and allied refining industry lost both the substitution and fabrication effects during 1963-1965

period. This caused a drastic decrease in the input-output coefficient for this industry during this period. (The r_{10} value was 0.4591 and s_{10} value was 0.0244, indicating that all the industries used petroleum and allied refining as their input.) All the industries were unwilling to substitute other inputs for petroleum and allied refining. The small value of fabrication effect implied that the petroleum and allied refining industry tended to reduce consumption of intermediate input per unit of gross output. The goods to be used as intermediate inputs were predominately from the crude petroleum and natural gas industry and some from a few other industries. The above relationships are indicated by Table 11. By reading coefficients of the tenth column, the largest value is the $a_{21} = 0.72609$. This means the tenth petroleum and allied refining industry bought, as intermediate input, predominantly large amounts of their products from the twenty first, the crude petroleum and natural gas industry. The small substitution and fabrication effects reduced the technical coefficient for the industry from $\bar{a}_{10.10} = 0.07428$ to $a_{10.10} = 0.00083$.

The coefficient for the rubber industry increased from $\bar{a}_{11.11} = 0.0449$ to $a_{11.11} = 0.09295$; as the high degree of fabrication effect for this industry offset the low degree of substitution effect. The r_{11} and s_{11} were 0.4907 and 4.2102.

Due to the small values of $r_{12} = 0.0458$ and

s_{12} = 0.5777, input-output coefficients for leather and leather products industry was reduced from $\bar{a}_{12.12}$ = 0.20209 to $a_{12.12}$ = 0.03311. It was found that the leather and leather products industry consumed predominantly large amounts of inputs from the rubber industry.

The stone, clay, and glass products industry had a low substitution effect which was offset by the high fabrication effect. Consequently, the industry's input-output coefficient increased from $\bar{a}_{13.13}$ = 0.10697 to $a_{13.13}$ = 0.20277.

The substitution effect for the primary metal products industry was so low that the high degree of fabrication effect was completely offset, and the industry's input-output coefficient was decreased to $a_{14.14}$ = 0.15842 from $\bar{a}_{14.14}$ = 0.27759 during the period from 1963 to 1965.

A low substitution effect and a high fabrication effect increased the input-output coefficient of the fabricated metal industry to $a_{15.15}$ = 0.15842 from $\bar{a}_{15.15}$ = 0.06263 during the period from 1963 to 1965.

The machinery and miscellaneous manufacturing industries had about the same trends in changing degrees of substitution and fabrication effects. That is, the trends of substitution effects for those industries were r_{16} = 0.3637, r_{17} = 0.3021, r_{18} = 0.2390, and r_{19} = 0.1949, whereas the trends of fabrication effects for those industries were s_{16} = 2.9335, s_{17} = 2.9425, s_{18} = 3.1891, and

s_{19} = 3.4801. These resulted in negative effect of fabrication; that is, the decreasing trend of inputs of either one of the producing or using industries were usually offset by a positive trend of inputs of the other industries.

As a consequence, the input-output coefficients of those industries had changed from $\bar{a}_{16.16}$ = 0.17027, $\bar{a}_{17.17}$ = 0.10783, $\bar{a}_{18.18}$ = 0.24799, $\bar{a}_{19.19}$ = 0.07328 to $a_{16.16}$ = 0.18166, $a_{17.17}$ = 0.09585, $a_{18.18}$ = 0.18902, and $a_{19.19}$ = 0.04970.

The value of the row multiplier for other mining industry was r_{20} = 0.3160; whereas that of the column multiplier was s_{20} = 2.8764. As the high value of the column multiplier was not large enough to offset the low value of the row multiplier, the input-output coefficients for this industry were reduced to $a_{20.20}$ = 0.09171 from $\bar{a}_{20.20}$ = 0.10090 during 1963-1965.

Notice should be taken of the value of the row multiplier for the crude petroleum and natural gas industry. Its degree of substitution effect, r_{21} = 66.2213, was so high that the low value of fabrication effect s_{21} = 0.2582 was offset, and the industry's input-output coefficient increased to $a_{21.21}$ = 0.41412 from $\bar{a}_{21.21}$ = 0.02422. This was an abrupt leap during this period and was largely attributable to the number of industries that used crude petroleum and natural gas, so few that the value of r_{21} was large. Natural gas and crude petroleum industry reduced consumption

of intermediate inputs per unit of gross output. A few industries increased the use of crude petroleum and natural gas as their inputs. These industries were chemicals and allied products, petroleum and allied refining, wholesale, retail sale trade, insurance and real estate, railroads, highway freight and warehousing, electric-gas-public utility, business repair services, including the crude petroleum and natural gas industry itself.

The low value of the substitution effect r_{22} = 0.0971 of the construction industry was a negligible value, however the fabrication effect s_{22} = 2.3274 was larger than r_{22}. The combination of both effects reduced the input-output coefficient from $\bar{a}_{22.22}$ = 0.00028 to $a_{22.22}$ = 0.00006.

For the wholesale trade and retail trade industries, the r_{23} and r_{24} values were 0.4541 and 0.3974, respectively. These values showed a decrease of substitution effects, whereas the fabrication effect s_{23} = 3.9436 and s_{24} = 3.8767, respectively, were so high that they offset the negative effect of substitution and increased input-output coefficients of the industries to $a_{23.23}$ = 0.1060 and $a_{24.24}$ = 0.01781 from $\bar{a}_{23.23}$ = 0.00592 and $\bar{a}_{24.24}$ = 0.01156, respectively, during 1963-1965.

The industries such as banking and finance, and insurance and real estate had an incredibly low degree of substitution effects: r_{25} = 0.1576 and r_{26} = 0.1482. The high degrees of fabrication effects, s_{25} = 4.4605 and

s_{26} = 1.9669, did not offset the low value of the row multipliers. Thus, the reductions in $a_{25.25}$ and $a_{26.26}$ are large, as shown in the 25th column and row, and 26th row and column of Table 11. The high value of s_{25} indicated that the degree of change in input structure for the banking and finance industry was remarkably large.

The trend of change in both substitution and fabrication effects of the transportation industry group was similar to the banking and finance industry. The substitution effects for the railroad industry, highway freight and warehousing industry, and other transportation industries were r_{27} = 0.4598, r_{28} = 0.6770, and r_{29} = 0.4227. Their s_{27}, s_{28}, and s_{29} values were 2.0515, 2.0383, and 4.3[illegible]9, respectively. As the least value of r_{27} was not offset completely by the high value of s_{27}, the coefficient of the railroad industry was reduced to $a_{27.27}$ = 0.02653 from $\bar{a}_{27.27}$ = 0.02812. But the low values of r_{28} and r_{29} were exceeded by the positive inputs in the same cells and the increased highway freight and warehousing industry's and other transportation industry's technical coefficients to $a_{28.28}$ = 0.07268 and $a_{29.29}$ = 0.09426 from $\bar{a}_{28.28}$ = 0.05267 and $\bar{a}_{29.29}$ = 0.05136, respectively.

During the 1963-1965 period, the input of telephone and telegraph services was substituted by other inputs: r_{30} = 0.6273, which was a low value. In order to satisfy the industry's total amount of intermediate output constraint,

all the industries had to reduce the use of the services of the telephone and telegraph industry.

However, the telephone and telegraph services industry had increased its consumption of intermediate inputs per unit of gross output. The telephone and telegraph service industry excluded the consumption of intermediate inputs from livestock, crop and other agricultures, food and kindred, lumber and wood products, furniture and fixtures, leather and leather products, stone, clay and glass products, fabricated metal, miscellaneous manufacturing, other mining, crude petroleum and natural gas, and hotels. Only a large s_{30} value can satisfy the constraint given by the intermediate input total. The negative inputs and positive input for the using and producing industry raised its coefficients from $\bar{a}_{30.30} = 0.00829$ to $a_{30.30} = 0.02253$ in the same cell of the matrix.

The low values of row and column multipliers of the electric, gas, and public utility industry in Oklahoma were $r_{31} = 0.3913$ and $s_{31} = 0.0836$. These low values of r_{31} and s_{31} were caused by small amounts of intermediate input and output totals available for this 31st industry. The large amounts of final demands and values-added by the industry were the subsequent causes for allowing small amount of intermediate input and output totals. These low values of r_{31} and s_{31} reduced input-output coefficient to $a_{31.31} = 0.00610$ from $\bar{a}_{31.31} = 0.18641$ during the 1963-1965 period.

The extent of substitution effects in the 32nd hotel and 33rd personal service industries were $r_{32} = 0.6520$ and $r_{33} = 0.2285$, while their fabrication effects were $s_{32} = 4.4405$ and $s_{33} = 4.2883$. These small values of row multipliers and large values of column multipliers indicated that the industries using hotel and personal services tended to substitute the services of hotel and personal for other inputs. The two industries consumed more intermediate inputs per unit of the gross output. The intermediate inputs were from all the industries except industry number 1, 2, 3, 5, 6, 14, 16, 20, 21, and 35 for the hotel industry and were from all the industries except industry number 1, 2, 5, 6, and 21 for the personal services industry.

Through the interaction process of positive and negative effect of substitution and fabrication, the input-output coefficients of both industries were changed slightly from $\bar{a}_{32} = 0.00200$ to $a_{32} = 0.00579$ for the hotel industry and from $\bar{a}_{33} = 0.02401$ to $a_{33} = 0.02353$ for the personal services industry.

The values of row and column multipliers of the 34th business repair services industry were $r_{34} = 0.0978$ and $s_{34} = 2.2775$. These r_{34} and s_{34} reduced input-output coefficients from $\bar{a}_{34.34} = 0.02337$ to $a_{34.34} = 0.00521$.

The substitution effect for the amusement and recreation industry was $r_{35} = 0.0772$, which implied an exceedingly small input substitution for using industries. The

value of s_{35} was 6.3785 which was the largest value of the s_j so far. This large fabrication effect indicates an upward trend of consumption of producing industries' input per unit of gross output. However, the large value of s_{35} was not great enough to offset the negative effect of small r_{35}. Consequently, the input-output coefficient of the industry decreased to $a_{35.35} = 0.0947$ from $\bar{a}_{35.35} = 0.19241$ during the period from 1963 to 1965.

The values of row and column multipliers r_{36} and s_{36} of the thirty-sixth professional services industry were 0.26930 and 3.82430, respectively. The small value of the row multiplier was accompanied by a large column multiplier. The professional services industry, like most of the industries studied above, tended to increase consumption of intermediate inputs per unit of gross output. Those intermediate inputs were from all the industries except lumber and wood products, furniture and fixtures, leather and leather products, primary metal products, and crude petroleum and natural gas. However, industries using professional services tended to use them less than other inputs. All the industries use the professional services except the petroleum and allied refining industry.

Interaction of the values of small r_{36} and large s_{36} increased the value of input-output coefficient from $\bar{a}_{36.36} = 0.00938$ to $a_{36.36} = 0.00966$ during the 1963-1965 period.

Summary

The values of the row multipliers r_i are uniformly lower than the values of column multipliers s_j. This shows that the degree of substituting inputs for other inputs for the using industries is low and the trends for increasing consumption of producing industries' inputs per unit of gross output is clearly indicated by the s_j values. The tendency to increase the substitution effect has been offset by the tendency in the economy to increase the fabrication effect. The input-output coefficient of an industry is greatly influenced by the increasing trend of consuming its own output; as the intermediate input per unit of gross output in the economy is more than substitution in certain goods which accumulate to excess in using industries' input structure. However, there are a few exceptions where the fabrication effect is smaller than substitution effect. These industries are livestock, crops and other agricultures, and crude petroleum and natural gas, which show that the increasing trend of fabrication effect is offset by the increasing trend of substitution of many cheaper goods in the input structure of using industries.

The surprising feature of the row and column multipliers is their range. The low row multipliers and high column multipliers are closely related to the total amount of intermediate input and output by industry,

respectively. The low amount of intermediate input by industry causes the low column multiplier. If the amount of intermediate output by an industry is steady, the row multiplier is roughly the reciprocal of the column multipliers.

The institutional factors such as the large diagonal transactions, that is, large in diagonal rows and/or columns, may seriously distort the row and column multipliers obtained, and may lead to less accurate estimates of the nondiagonal part of the matrix than could be obtained by working the net of intra-industrial transactions.

The tendency of high values of column multipliers is associated with changes in the capital stock, and the smaller value of row multipliers typifies small substitution effects during the 1963-1965 period. This feature shows that Oklahoma industries are inclined to use more capital and less labor where possible. Row multipliers do most of the job in estimates of changes in coefficients over time.

To accomplish the Oklahoma input-output coefficient matrix A^{OK} from the A matrix examined, some adjustment is required. This will be developed in Chapter VI.

CHAPTER VI

OKLAHOMA IMPORT STRUCTURE AND ADJUSTED INPUT-OUTPUT COEFFICIENT

Introduction

As economic activity within a state is interrelated with that outside its boundaries, it is important to study the trade among states. The trade between one state and the rest of the world includes the export and import of commodities and services during a particular period of time. The demands for exports as well as imports should be estimated in such a way that the total amount of imports is in balance with the amount of exports. From time to time, however, the balance between imports and exports is not maintained. Therefore, it is worthwhile to determine which industries export from and which import into the state economy.

Adjustment Process

The updated 1965 input-output coefficients change when the 1965 Oklahoma import structure is analyzed. As was shown in the second column of Appendix II, the total amount of export by industry is included in the final

bill of goods and services, because the amount of goods and services exported is produced in the state. However, the portion of the import should be separated from the portion of productive activity in Oklahoma. This imported portion will be estimated as follows:

$$X_i = \sum_{j=1}^{n} A_{ij}X_j + f_i \ (-m_{1i} - m_{2i}) \qquad (1)$$

where X_i is the total output of the ith selling industry; A represents the updated 1965 input-output coefficient matrix; X_j shows the total output of the jth producing industry; f_i = final demand; m_{1i} is the complementary imports which must effectively come from abroad, and mainly are assumed to be intermediate and proportional to the output of the using industry; m_{2i} is competitive imports which could be replaced by domestic production if necessary, and are assumed to be functionally related to the amount of money available from exports after complementary imports.[1]

As complementary imports m_{1i} are mainly intermediate, this m_1 should be separated from updated input-output coefficient matrix A. Estimate of m_{1i} will be made

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[1]R. Stone, Mathematics in the Social Sciences and Other Essays (Massachusetts: The M.I.T. Press, 1966), p. 85.

by using Purchase Only Location Quotient approach[2] as follows:

$$m_{1i} = \sum_{j=1}^{n} X_j A_{ij} L_i \qquad (2)$$

where X_i is total output of ith using industry; A_{ij} shows updated input-output coefficient; L_i is the coefficient value of purchase only location quotient of the ith using industry. Then competitive import m_{2i} will be estimated as follows:

$$m_{2i} = X_i - \sum_{j=1}^{n} X_j (A_{ij} - A_{ij}L_i) - f_i \qquad (3)$$

where f_i shows final demand of ith industry. The values of the m_2 are shown in the third column of Appendix II. under the heading of "Inventory change."[3]

Analysis of Import Structure

In order to determine a regional technical coefficient with non-survey technique, the Purchase Only Location Quotient approach will be utilized. The approach is as follows:

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[2]William A. Schaffer and Kong Chu, "Nonsurvey Techniques for Constructing Regional Interindustry Models," paper of the Regional Science Association, Vol. 23, pp. 83-101.

[3]W. Duane Evans, "Input-Output Computation," ed. by Barna in The Structural Interdependence of the Economy, processings of an international conference on input-output analysis (New York: John Wiley and Sons, Inc., 1954), p. 96. Also see W. Duane Evans and Marvin Hoffenberg, "The Interindustry Relations Study for 1947," The Review of Economics and Statistics, Vol. 34 (May, 1952), 111.

$$L_i = \frac{X_i^{OK} / X_T^{OK}}{X_i^{US} / X_T^{US}} \qquad (4)$$

where X represents total output of the ith selling industry; OK shows Oklahoma; US indicates United States; T means summation of total output of the industries that purchased input from the ith industry. When coefficient of location quotient L_i is unitary, the industry in Oklahoma is self-sufficient, and if the $L_i < 1$, the industry in Oklahoma imports some of the industry's needs. Oklahoma technical coefficient, a_{ij}^{OK}, and import structure a_{ij}^{ml} are estimated as follows:

$$a_{ij}^{ml} = L_i \; A_{ij} \qquad (5)$$

$$a_{ij}^{OK} = A_{ij} - a_{ij}^{ml} \qquad (6)$$

$$A_{ij} = a_{ij}^{OK} + a_{ij}^{ml} \; . \qquad (7)$$

An Oklahoma industry exports some of its output if $L_i > 1$. In this case, the updated input-output coefficient of ith industry will not be effected.

The computation results of equation (4) are shown in Appendix IV. The first column shows the industry number; the second column shows the summation of total outputs of the U.S. industries X_T^{US} that purchased inputs from the i' U.S. industry. The third column shows the ratio of total output of the U.S. i^{th} industry, X_i^{US}, to the

summation of total outputs of the U.S. industries that purchased input from the U.S. i^{th} industry, X_T^{US}. Fourth column includes the summation of total output of the Oklahoma industries that purchased input from the Oklahoma i^{th} industry X_T^{OK}. The ratio X_i^{OK}/X_T^{OK} is shown in the fifth column. The coefficients of the purchase only location quotient L_i are in the fifth column.

The coefficients of 1963 Oklahoma location quotient were estimated from the 1963 U.S. input-output coefficient table. These coefficients are used for estimating the 1963 Oklahoma import structure under the assumption that the import structure for Oklahoma is fairly stable. This assumption was also made by Isard,[4] from which he built the first regional input-output coefficient table.

The computation results of equation (5) are in Appendix V. The coefficients in each cell indicate a_{ij}^{ml} which is the Oklahoma import structure.

The Oklahoma technical coefficients of 1965 a_{ij}^{OK} are shown in Table 12. This table shows 1965 Oklahoma technical coefficient matrix of 36 industries. The

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[4] W. Isard, "Regional Commodity Balance and Interregional Commodity Flows," American Economic Review, Vol. 43 (May, 1953), 167-86.

TABLE 12

TECHNICAL COEFFICIENTS MATRIX, OKLAHOMA, 1965
WITH RAS METHOD

Industry	1	2	3	4	5	6	7	8	9
1	0.33085	0.22437	0.45249	0.0	0.0	0.0	0.0	0.0	0.00032
2	0.30668	0.05288	0.09428	0.0	0.06795	0.0	0.0	0.0	0.00214
3	0.03632	0.00004	0.05247	0.0	0.00010	0.0	0.00936	0.00098	0.01535
4	0.0	0.0	0.00008	0.05376	0.00058	0.00052	0.00045	0.0	0.00012
5	0.00000	0.00000	0.00000	0.0	0.00002	0.00001	0.00000	0.00000	0.00000
6	0.0	0.0	0.00003	0.0	0.00021	0.00202	0.0	0.00010	0.0
7	0.00001	0.00001	0.00059	0.00042	0.00033	0.00094	0.02543	0.01365	0.00137
8	0.00007	0.00024	0.00264	0.00012	0.00015	0.0	0.01576	0.18261	0.00113
9	0.00009	0.00163	0.00014	0.00101	0.00108	0.00016	0.00373	0.00197	0.00960
10	0.00265	0.02637	0.00131	0.00111	0.00755	0.00224	0.01639	0.00461	0.28683
11	0.00047	0.00323	0.00162	0.00188	0.00230	0.07886	0.02337	0.00792	0.01516
12	0.00000	0.0	0.0	0.00004	0.00000	0.00001	0.00000	0.0	0.00000
13	0.00017	0.00198	0.00889	0.0	0.02009	0.03383	0.01197	0.0	0.01523
14	0.00001	0.00003	0.00079	0.0	0.00067	0.00576	0.00106	0.00008	0.00263
15	0.00120	0.00144	0.00434	0.00197	0.05263	0.15213	0.03983	0.00450	0.01228
16	0.00009	0.00453	0.00022	0.00045	0.00468	0.00187	0.00550	0.00306	0.00453
17	0.00001	0.00002	0.0	0.0	0.00010	0.00280	0.0	0.0	0.00070
18	0.00003	0.00017	0.00002	0.00001	0.00014	0.00019	0.00007	0.00015	0.00002
19	0.00000	0.00001	0.00001	0.00411	0.00048	0.00052	0.00013	0.00057	0.00024
20	0.00007	0.00230	0.00022	0.00009	0.00022	0.00030	0.01161	0.00007	0.01835
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.15823
22	0.00057	0.00187	0.00017	0.00018	0.00106	0.00033	0.00122	0.00051	0.00086
23	0.00477	0.00820	0.00567	0.01477	0.01510	0.01907	0.02138	0.01390	0.01320
24	0.00758	0.01299	0.00898	0.02342	0.02405	0.03066	0.03401	0.02201	0.02097
25	0.00057	0.00529	0.00038	0.00162	0.00215	0.00315	0.00203	0.00880	0.00127
26	0.00143	0.01326	0.00096	0.00411	0.00538	0.00799	0.00515	0.02207	0.00320
27	0.00250	0.00225	0.00404	0.00187	0.01460	0.00739	0.01952	0.00511	0.00694
28	0.00686	0.00616	0.01109	0.00512	0.04017	0.02004	0.05356	0.01407	0.01912
29	0.00029	0.00081	0.00042	0.00175	0.00162	0.00247	0.00247	0.00711	0.00152
30	0.00068	0.00193	0.00101	0.00429	0.00395	0.00581	0.00570	0.01730	0.00365
31	0.00128	0.00480	0.00262	0.00357	0.01136	0.00688	0.03002	0.00777	0.02068
32	0.0	0.0	0.00010	0.0	0.0	0.0	0.00032	0.00030	0.00020
33	0.0	0.0	0.00051	0.00010	0.0	0.00033	0.00139	0.00139	0.00089
34	0.00024	0.00200	0.00108	0.00118	0.00195	0.00202	0.00252	0.00419	0.00475
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	0.00166	0.00021	0.00012	0.00035	0.00038	0.00039	0.00055	0.00176	0.00034
MP	0.01710	0.01821	0.03199	0.18755	0.21897	0.11123	0.19380	0.12685	0.07758

TABLE 12 (Continued)

Industry	10	11	12	13	14	15	16	17	18
1	0.0	0.0	0.09509	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.00144	0.0	0.0	0.0	0.0	0.0
3	0.00001	0.0	0.05899	0.00022	0.00031	0.0	0.00008	0.0	0.0
4	0.0	0.00110	0.00316	0.00030	0.00036	0.00043	0.00032	0.00033	0.00024
5	0.0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
6	0.0	0.00003	0.0	0.00006	0.0	0.00015	0.00003	0.00001	0.00027
7	0.00000	0.00196	0.00128	0.00125	0.00013	0.00095	0.00022	0.00091	0.00011
8	0.0	0.00037	0.00036	0.00008	0.00411	0.00041	0.00025	0.00108	0.00068
9	0.00001	0.01767	0.00133	0.00138	0.00155	0.00126	0.00029	0.00106	0.00040
10	0.00083	0.00410	0.00225	0.00991	0.01166	0.00556	0.00486	0.00584	0.00313
11	0.0	0.08921	0.12386	0.01372	0.00187	0.01516	0.01716	0.03605	0.02526
12	0.0	0.00003	0.00326	0.00000	0.00000	0.00001	0.00001	0.00000	0.0
13	0.00005	0.03526	0.00139	0.20277	0.00759	0.02651	0.01795	0.05806	0.02099
14	0.00001	0.00117	0.00021	0.00103	0.04353	0.03742	0.01277	0.01170	0.00978
15	0.00001	0.04246	0.01999	0.01835	0.06025	0.17538	0.11256	0.12605	0.12340
16	0.0	0.00394	0.00130	0.00624	0.02530	0.03794	0.15933	0.03463	0.04989
17	0.0	0.00193	0.0	0.00195	0.00683	0.01174	0.04027	0.09585	0.04128
18	0.0	0.00138	0.0	0.00013	0.00161	0.00405	0.00568	0.00647	0.05143
19	0.0	0.00225	0.00444	0.00047	0.00034	0.00062	0.00052	0.00068	0.00012
20	0.00003	0.00255	0.00052	0.05458	0.08778	0.00040	0.00029	0.00049	0.00031
21	0.72609	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.00003	0.00097	0.00035	0.00085	0.00194	0.00045	0.00044	0.00036	0.00041
23	0.00007	0.02050	0.01922	0.01021	0.02083	0.01648	0.01468	0.01709	0.01279
24	0.00012	0.03264	0.03074	0.01621	0.03307	0.02626	0.02332	0.02712	0.02028
25	0.00003	0.00194	0.00192	0.00122	0.00170	0.00236	0.00172	0.00141	0.00090
26	0.00007	0.00507	0.00515	0.00312	0.00427	0.00594	0.00434	0.00358	0.00224
27	0.00013	0.00874	0.00466	0.01288	0.00050	0.00091	0.00359	0.00469	0.00427
28	0.00036	0.02411	0.01313	0.03541	0.00141	0.00256	0.00982	0.01287	0.01172
29	0.0	0.00233	0.00240	0.00167	0.00256	0.00296	0.00223	0.00424	0.00135
30	0.00001	0.00533	0.00512	0.00394	0.00615	0.00709	0.00537	0.01034	0.00328
31	0.00017	0.01766	0.00701	0.02960	0.03951	0.01178	0.00706	0.01240	0.00475
32	0.0	0.00027	0.0	0.0	0.00006	0.00021	0.00011	0.00010	0.00023
33	0.0	0.00097	0.00019	0.00025	0.00036	0.00120	0.00044	0.00057	0.00050
34	0.00002	0.00339	0.00264	0.00176	0.00190	0.00217	0.00176	0.00463	0.00184
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	0.0	0.00058	0.00044	0.00034	0.00040	0.00060	0.00058	0.00123	0.00033
MP	0.00031	0.11844	0.10127	0.04017	0.14315	0.15014	0.09403	0.09034	0.19520

TABLE 12 (Continued)

Industry	19	20	21	22	23	24	25	26	27
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.04325	0.0
2	0.00612	0.0	0.0	0.01008	0.0	0.0	0.0	0.03978	0.00516
3	0.00176	0.0	0.0	0.00024	0.00691	0.00693	0.0	0.00071	0.00206
4	0.00092	0.0	0.0	0.00013	0.00039	0.00040	0.0	0.00009	0.00008
5	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.0	0.00000	0.0
6	0.00024	0.0	0.0	0.00034	0.00003	0.00005	0.0	0.00000	0.0
7	0.00279	0.00007	0.0	0.00017	0.00094	0.00095	0.00066	0.00002	0.00002
8	0.00925	0.0	0.0	0.00004	0.00329	0.00331	0.02056	0.00081	0.00107
9	0.00294	0.00111	0.00004	0.00071	0.00036	0.00036	0.00000	0.00014	0.00001
10	0.00514	0.01574	0.00062	0.02078	0.02013	0.02018	0.00610	0.00495	0.03650
11	0.07057	0.01990	0.00015	0.00804	0.00489	0.00491	0.00059	0.00069	0.00479
12	0.00011	0.0	0.0	0.0	0.00000	0.00000	0.0	0.00000	0.0
13	0.02303	0.03658	0.00073	0.14748	0.00523	0.00527	0.0	0.00078	0.00049
14	0.00784	0.00168	0.00008	0.00136	0.00011	0.00010	0.0	0.00004	0.00046
15	0.08142	0.00717	0.00104	0.03475	0.00696	0.00703	0.0	0.00124	0.00435
16	0.00481	0.04552	0.00033	0.01295	0.00345	0.00346	0.0	0.00133	0.00167
17	0.01440	0.00355	0.00062	0.01652	0.00181	0.00184	0.00009	0.00052	0.00246
18	0.00152	0.00093	0.00001	0.00035	0.00048	0.00048	0.00002	0.00010	0.00190
19	0.02076	0.00003	0.0	0.00037	0.00049	0.00050	0.00004	0.00008	0.0
20	0.00046	0.09171	0.0	0.00635	0.00006	0.00010	0.0	0.00046	0.00018
21	0.0	0.0	0.41412	0.0	0.01306	0.01540	0.0	0.11592	0.06793
22	0.00062	0.00088	0.00067	0.00005	0.00108	0.00109	0.00150	0.01341	0.00504
23	0.02541	0.00976	0.00049	0.03155	0.01060	0.01121	0.00677	0.00298	0.00878
24	0.04060	0.01556	0.00079	0.04995	0.01805	0.01781	0.01883	0.00833	0.01369
25	0.00245	0.00491	0.00186	0.00103	0.01964	0.01964	0.01868	0.00825	0.00220
26	0.00622	0.01232	0.00464	0.00258	0.02795	0.02796	0.04676	0.02062	0.00551
27	0.00622	0.01154	0.00072	0.00870	0.00361	0.00354	0.00086	0.00081	0.01942
28	0.01695	0.03168	0.00197	0.02389	0.00986	0.00969	0.00239	0.00221	0.05468
29	0.00288	0.01595	0.00098	0.01267	0.00663	0.00654	0.02157	0.00066	0.00307
30	0.00703	0.03845	0.00238	0.03069	0.01613	0.01586	0.05230	0.00160	0.00739
31	0.00742	0.02005	0.00116	0.00315	0.02207	0.02849	0.03690	0.00152	0.00506
32	0.0	0.0	0.0	0.0	0.00036	0.00035	0.0	0.00021	0.0
33	0.00078	0.0	0.0	0.0	0.00178	0.00178	0.0	0.00098	0.00016
34	0.00396	0.00155	0.00011	0.00325	0.00719	0.00718	0.01373	0.00133	0.00223
35	0.0	0.0	0.0	0.0	0.00009	0.00009	0.0	0.0	0.0
36	0.00066	0.00056	0.00003	0.00060	0.00105	0.00104	0.01528	0.00045	0.00062
MP	0.12157	0.04022	0.00520	0.04972	0.03755	0.03756	0.04441	0.01180	0.03821

TABLE 12 (Continued)

Industry	28	29	30	31	32	33	34	35	36
1	0.00033	0.0	0.0	0.0	0.0	0.0	0.0	0.03059	0.00141
2	0.00529	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00476
3	0.00208	0.0	0.0	0.0	0.0	0.00018	0.00001	0.0	0.01047
4	0.00010	0.0	0.00021	0.00000	0.00209	0.00211	0.00004	0.0	0.00004
5	0.00000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.00002	0.00006	0.00005	0.00000	0.00048	0.00043	0.00012	0.00002	0.00013
8	0.00106	0.0	0.00037	0.0	0.00192	0.00091	0.14846	0.01685	0.02274
9	0.00001	0.0	0.00002	0.00000	0.00177	0.00168	0.00029	0.0	0.00131
10	0.03717	0.01090	0.01100	0.00029	0.02035	0.01851	0.00527	0.00685	0.00773
11	0.00486	0.00203	0.00208	0.00001	0.00834	0.00759	0.00575	0.00078	0.00234
12	0.0	0.0	0.0	0.0	0.00022	0.00020	0.0	0.00002	0.0
13	0.00048	0.0	0.0	0.0	0.01497	0.01464	0.00789	0.0	0.00068
14	0.00047	0.00008	0.00006	0.00001	0.0	0.00005	0.00000	0.0	0.0
15	0.00443	0.0	0.0	0.0	0.01360	0.01122	0.00811	0.0	0.00035
16	0.00168	0.0	0.00014	0.0	0.0	0.00019	0.01192	0.0	0.00004
17	0.00250	0.01522	0.01501	0.00002	0.05221	0.05014	0.00847	0.0	0.00028
18	0.00194	0.00005	0.00009	0.0	0.00029	0.00035	0.00268	0.00005	0.00001
19	0.00001	0.0	0.0	0.0	0.00758	0.00724	0.00149	0.00229	0.00044
20	0.00015	0.0	0.0	0.00057	0.0	0.00019	0.00001	0.0	0.00040
21	0.07559	0.0	0.0	0.36361	0.0	0.0	0.00302	0.0	0.0
22	0.00514	0.00894	0.00896	0.00021	0.00299	0.00358	0.00022	0.00567	0.00652
23	0.00896	0.00653	0.00685	0.00001	0.02012	0.01951	0.01569	0.01770	0.01110
24	0.01391	0.01058	0.01057	0.00001	0.03169	0.03061	0.02442	0.02798	0.01728
25	0.00224	0.02256	0.01391	0.00006	0.03422	0.02394	0.00156	0.00627	0.01067
26	0.00564	0.02810	0.03493	0.00008	0.08627	0.06062	0.00390	0.01583	0.02670
27	0.01982	0.00073	0.00060	0.00015	0.00299	0.00342	0.00094	0.00168	0.00160
28	0.05580	0.00149	0.00162	0.00008	0.01152	0.00947	0.00260	0.00474	0.00449
29	0.03124	0.09426	0.09564	0.00037	0.00561	0.00580	0.02538	0.00701	0.00781
30	0.00754	0.02302	0.02253	0.00023	0.01390	0.01385	0.06098	0.01769	0.01881
31	0.00511	0.01830	0.01806	0.00610	0.02601	0.02442	0.01000	0.02723	0.04287
32	0.00005	0.0	0.0	0.0	0.00579	0.00467	0.00003	0.0	0.00075
33	0.00017	0.00017	0.00031	0.0	0.02430	0.02353	0.00016	0.00133	0.00361
34	0.00228	0.00396	0.00397	0.00005	0.00517	0.00503	0.00178	0.01001	0.00313
35	0.0	0.00551	0.00551	0.0	0.0	0.00002	0.00018	0.04055	0.00012
36	0.00066	0.00097	0.00107	0.00001	0.00358	0.00313	0.00075	0.00424	0.00966
MP	0.03907	0.02323	0.02541	0.00027	0.06248	0.05570	0.05300	0.08698	0.02967

The first row and the first column show industry number.
The last row, MP, indicates portion of intermediate input per unit of gross output.
MP refers to import.

thirty-seventh government industry is not included in Table 12 as the industry does not have any interindustry transactions.

Analysis of Coefficients of Location Quotient

The leading export industry in Oklahoma is number 21, crude petroleum and natural gas. Its coefficient of location quotient is 5.3667, as is clearly shown on the fourth column in Appendix II. The next highest export-oriented industry is other mining industry. The hotel industry, the thirty-second, is the third largest export industry in Oklahoma. The value of its location quotient is 4.5038, followed by the personal services industry. The industries of livestock, petroleum and allied refining, transportation, and telephone and telegraph are export-oriented and do export moderate portions of their output. The industries of agricultures, stone-clay-glass, electric machinery, wholesale trade, retail trade, banking and finance, electric-gas-public utility, and professional services more or less do export their outputs. The average value of their location quotient is 1.38.

Twenty of thirty-six industries import inputs to meet the using industry's demands for their inputs. The largest importer is the one whose coefficient value of location quotient is 0.00001, which means that the industry does import almost all of its inputs to meet the demands of industries which use the products of lumber and wood.

The second largest importer is the leather and leather product industry. This is unexpected since Oklahoma has a large production of hide from its cattle. However, the location quotient is accurate since artificial leather is substituted for real leather.

The paper and allied products industry also imports much of its inputs to meet the demands of various using industries for paper and allied products. The fourth highest importer is the chemicals and allied products industry in Oklahoma. The value of its location quotient is 0.20380; various using industries' demands for chemical and allied products are met with one fifth of the Oklahoma products, while shortages are met with imports.

The Oklahoma apparel industry, the fifth largest importer, also imports its inputs to meet various industries' demands for products of the apparel industry. Primary metal producing, miscellaneous manufacturing, and amusement and recreation industries import more than half of their inputs to meet the various using industries' demands for producing industries' products.

The food and kindred, railroad, and highway freight and warehousing industries import less than 30 percent of their total input requirements. Less than 20 percent of the total production requirements are imported by the printing and publishing, construction, insurance and real estate, and machinery industries in Oklahoma.

Finally, the rubber and fabricated metal industries import less than 10 percent of producing industries' total needs to meet the various using industries' demands for rubber and fabricated metal. Thus, the industries consuming the imported intermediate inputs reduce their values of the row coefficients in proportion to the location quotient of the using industries.

By summing all portions of imports specified in each cell of the column, the total amount of material imported to produce a unit of gross output is obtained and is shown in the import row at the bottom of the 1965 Oklahoma technical coefficient matrix of Table 12. The structure of the import by each cell is shown in Appendix V.

Portion of Import of Producing Industry

The lumber and wood products industry imports the largest input of its materials requirements. The portion of its import is 0.21897 of each gross output unit. The second ranking importer of intermediate input in Oklahoma is the transportation equipment industry, which imports its inputs by 0.19520 per unit of gross output of transportation equipment.

The third highest importer of intermediate input is the paper and allied products industry, which imports its raw material by 0.19380 per unit of its gross output. The apparel industry in Oklahoma is the fourth highest

importer of its requirements for intermediate input: the portion of its import is 0.18755 per unit of gross output.

The fabricated metal and primary metal products industries imported their intermediate inputs by 0.15014 and 0.14315 per unit of gross outputs as producing industries. The portions of the intermediate inputs imported for the industries producing printing and publishing and miscellaneous manufacturing are 0.12685 and 0.12157 of each gross output unit.

The rubber industry's import of intermediate input is 0.11844 per unit of gross output. The furniture and fixture industry imported its intermediate input by 0.11123 per unit of gross output. The Oklahoma leather and leather products industry imported small amounts of its intermediate inputs: only 0.10127 per unit of gross output.

The machinery industry imported small amounts of intermediate input. Also the electric machinery industry imported a similar intermediate input. The small portions of the intermediate input have been imported for both the amusement and recreation, and the chemicals and allied products industries.

The hotel and personal services industries in Oklahoma imported a negligible amount of intermediate input per unit of their gross output. The business repair services, construction, highway freight and warehousing, railroad, food and kindred, and insurance and real estate

industries do import small amounts of intermediate inputs per unit of gross output.

Though the electric-gas-public utility industry is the third largest exporter in Oklahoma, it imports the least amount of intermediate input per unit of gross output. The sixth largest exporter in Oklahoma industries is the petroleum and allied refining industry, although it is second from the lowest importer of the intermediate input per unit of gross output.

The crude petroleum and natural gas industry is the largest exporter in Oklahoma, although it is third from the lowest importer of intermediate inputs per unit of gross output. The livestock industry is the fifth largest export-oriented industry in Oklahoma, although it is fourth from the least importer of its intermediate inputs.

The crops and other agricultural products industry is export-oriented, although it is fifth from the least importer of the intermediate input per unit of gross output. The other transportation, telephone and telegraph, and professional industries in Oklahoma are sixth, seventh, and eighth from the lowest importers of intermediate inputs per unit of gross output, although they are export-oriented industries in Oklahoma.

The wholesale, retail sale, stone-clay-glass, and other mining industries import negligible amounts of their

intermediate inputs per unit of gross output. But they are export industries in Oklahoma.

Throughout the study of the structure of trade patterns of the Oklahoma economy, it is remarkable that the industries oriented for export of their outputs import a small amount of intermediate inputs per unit of gross output. Thus, trade between different regions is brought about by differences in geographical specialization caused by different endowments of factor resources influencing the factor cost and relative prices. An ultimate underlying cause of trade, therefore, is the differences in factor endowment.

CHAPTER VII

SUMMARY AND CONCLUSION

The major aim of this study was to estimate the 1965 input-output coefficient matrix for Oklahoma under the assumption that the coefficients were not constant over time. In order to prove this assumption, the data on Oklahoma's total output, values-added, and final demand by industry for estimating year 1965, and the data on the input-output coefficient matrix for the base year 1963 were used.

It was found that the input-output ratios were not constant over time as the values of substitution and fabrication effects were not unitary during the two periods of the base year and the estimating year.

Through study of the value-added by industry, it was found which industries in Oklahoma carry on the largest productive activity. The twenty-fourth retail sales trade industry was the largest contributor for adding values in its process of production. The industry's total amount of value-added is $744.5 million, which was 11 percent of the Oklahoma Gross State Product in 1965.

The second largest contributor for the 1965 Gross State Product was the insurance and real estate industry in Oklahoma. The total amount of value-added by this industry was $673.6 million, which was 10 percent of the 1965 Oklahoma Gross State Product.

As expected, the crude petroleum and natural gas industry in Oklahoma was the third highest contributor for the Oklahoma Gross State Product. It was assumed that crude petroleum and natural gas was the major productive industry that added the most value in Oklahoma. However, the total amount of value-added by this industry was $560.8 million. The difference in value-added between the retail sales trade and the crude petroleum and natural gas industries was about $183.7 million. The crude petroleum and natural gas industry contributed about 8 percent more than that of retail sale industry for the Gross State Product.

The wholesale trade and professional services industries were similar in the size of their values-added. The total amounts were $418.5 million and $404.1 million, respectively. Surprisingly, the amount of value-added by the professional services industry is the fifth highest.

The industries which fall far below the Gross State Product of the above industries were construction, crops and other agricultures, and electric-gas-public utility in Oklahoma. The crops and other agricultures and

electric-gas-public utility industries were deemed to be the major industries in Oklahoma, but they are sixth, seventh, and eighth highest. The total amounts of values-added by these industries were $287.7 million, $252.2 million, $205.9 million, respectively.

The industries creating values in the amounts between $175.3 million-$102.5 million were livestock, banking and finance, food and kindred, telephone and telegraph, highway freight and warehousing, machinery, personal services, transportation equipment, fabricated metal, petroleum and allied refining, stone-glass-clay products, and other transportation industries. These industries were, of course, rated according to their values-added.

The industries whose range of values-added fell between $91.3 million-$21.7 million were business repair services, electric machinery, printing and publishing, railroad, rubber, primary metal products, apparel, hotel, amusement and recreation, and other mining industries.

The industries that created the least amount of values-added were the leather and leather products and furniture and fixtures industries in Oklahoma. The total amount of value-added by the leather and leather products industry was $2.1 million. The value-added by the furniture and the fixtures industry was $8.7 million.

The third from the bottom in terms of the size of value-added is the lumber and wood products industry in Oklahoma. The total amount of the industry's value-added in 1965 was $12.1 million. The fourth from the bottom was the paper and allied products industry, whose total amount of value-added was $16.3 million. The miscellaneous manufacturing industry with a value-added of $16.5 million was fifth from the bottom. Finally, the chemical and allied products industry created only $19.5 million of value-added and was sixth from the bottom.

Few noticeable changes were found for Oklahoma industries during the period 1963-1965. It was a general trend for Oklahoma industries to increase the use of livestock and other agricultural products, while reducing the use of the products of other industries. This trend is remarkable for the industries using crude petroleum and natural gas. All the industries in Oklahoma increased the use of natural gas instead of using other inputs.

In particular, some industries reduced the use of leather and leather products and substituted other products. Some industries drastically reduced the use of the output of furniture and fixtures, chemicals and allied products, construction, business repair services, and amusement and recreation during the period of 1963-1965.

The livestock industry reduced its consumption of the intermediate inputs produced by various other industries'

inputs per unit of gross output. The petroleum and allied refining, crude petroleum and natural gas, and electricity-gas-public utility industries also reduced the consumption of intermediate inputs purchased for various other industries per unit of gross output. All the industries in Oklahoma, except the four above-mentioned, increased their consumption of intermediate inputs per unit of gross output.

It was also found that the leading export industries were crude petroleum and natural gas, other mining, and hotel. The leading importers were the lumber and wood products, leather and leather products, and paper and allied products industries.

In conclusion, it was proved that the input-output coefficients were not constant over time. The causes of the change were attributable to the substitution and fabrication effects which reflect the change of technology and availability of resources in the process of production activity. The substitution and fabrication effects also were influenced by consumers' income and consumption.

There were limited findings of the economic factors affecting the values of r_i and s_j over time. Therefore, there was little detailed economic explanation of the changes in input-output coefficient over time for Oklahoma during 1963-1965.

The estimation of more accurate coefficient changes heavily depends upon securing more accurate data on intermediate input and output amounts by industry. In order to make a reliable estimate of input-output coefficient changes over time, the total output, the final demand, and the value-added by industry should be accurately estimated. However, when these data are available, the input-output coefficient matrix can be updated more accurately for regression on and prediction of future economic activity in the state.

APPENDICES

APPENDIX I

OKLAHOMA VALUES-ADDED BY INDUSTRY 1950-1969
(in million)

Industry Year	1	2	3	4	5	6	7	8
50	$144.1	$207.4	$ 63.0	$ 0.5	$ 5.3	$ 5.9	$ 2.7	$40.0
51	169.3	243.5	68.5	2.4	5.8	6.2	1.8	40.2
52	167.5	241.1	74.1	4.2	6.4	6.4	6.9	40.4
53	147.4	212.0	91.3	5.0	6.9	6.6	2.2	40.2
54	125.2	180.2	98.4	10.2	7.4	6.9	2.3	40.0
55	119.8	172.3	95.3	11.4	7.9	7.1	4.3	43.6
56	104.5	150.4	113.2	14.2	8.4	7.3	5.0	43.9
57	107.7	154.9	123.0	19.7	7.7	12.1	4.6	45.3
58	170.4	245.1	131.9	15.4	8.6	6.1	9.1	46.9
59	150.8	217.1	127.2	12.4	9.8	6.7	8.4	48.9
60	173.9	250.3	129.4	13.0	11.0	7.2	8.5	50.4
61	173.5	249.7	138.5	12.6	12.2	7.7	9.7	50.1
62	139.8	201.2	139.2	15.4	13.4	8.2	11.2	51.6
63	137.2	197.3	148.2	25.6	12.5	8.3	13.4	57.1
64	136.0	195.6	154.6	25.2	13.9	9.3	14.4	60.8
65	175.3	252.2	157.0	25.9	12.1	8.7	16.3	66.2
66	165.3	237.9	166.8	31.3	14.0	8.7	17.9	69.8
67	173.7	249.9	176.4	40.7	12.3	13.0	18.7	80.2
68	156.1	224.6	181.6	33.0	14.0	10.1	15.8	70.0
69	184.7	265.7	187.9	34.8	15.2	10.3	18.3	72.0

APPENDIX I (Continued)

Industry / Year	9	10	11	12	13	14	15	16
50	$ 14.5	$ 68.0	$ 18.1	$ 2.5	$ 38.1	$ 24.0	$ 24.7	$ 37.5
51	15.0	85.3	19.4	2.1	41.2	32.0	30.3	62.3
52	15.4	82.2	20.9	2.4	43.3	31.6	36.0	65.9
53	15.9	90.2	20.7	2.4	48.9	29.0	41.7	66.1
54	16.3	98.9	21.0	2.4	48.5	25.5	49.3	76.3
55	16.7	108.5	27.4	2.4	55.8	27.1	53.1	86.0
56	17.2	145.5	25.9	2.2	54.7	30.0	63.5	102.7
57	17.6	147.2	28.7	2.2	55.1	27.1	66.7	93.7
58	15.7	108.4	31.6	2.2	66.6	23.1	72.3	77.2
59	17.2	99.8	34.4	2.2	79.6	32.3	77.7	104.9
60	22.5	139.8	37.2	2.2	71.2	38.3	83.9	88.4
61	19.6	123.6	40.1	2.2	75.2	31.6	86.5	101.5
62	20.0	120.4	42.9	2.1	77.3	27.7	85.4	97.5
63	18.4	113.3	47.4	1.9	89.8	45.8	83.9	120.2
64	24.2	98.8	45.8	2.0	95.4	45.1	100.8	133.3
65	19.5	110.8	52.4	2.1	103.8	46.4	112.1	139.2
66	23.5	136.9	56.9	2.5	112.0	52.4	128.5	160.4
67	19.1	143.2	59.9	2.1	98.9	55.0	164.7	184.3
68	22.5	137.6	67.9	2.0	109.8	48.9	136.4	166.5
69	22.9	140.2	86.0	1.9	113.9	50.4	142.8	160.1

APPENDIX I (Continued)

Industry / Year	17	18	19	20	21	22	23	24
50	$ 19.7	$ 12.6	$ 7.7	$ 21.6	$332.7	$150.0	$164.5	$355.3
51	21.8	14.4	8.9	22.5	347.4	160.9	183.2	384.2
52	23.8	55.9	9.6	23.5	362.1	171.8	201.9	413.1
53	25.7	73.2	11.1	24.4	376.7	182.7	220.6	441.9
54	9.3	50.1	9.2	23.8	366.9	179.7	237.9	489.1
55	15.3	66.2	12.2	26.9	411.0	195.1	262.4	504.7
56	19.8	75.8	15.8	28.8	479.5	214.7	297.5	552.4
57	24.4	51.2	10.4	25.1	464.2	222.3	303.0	563.8
58	19.1	71.5	6.0	23.9	456.4	242.1	309.4	580.1
59	35.3	62.2	7.8	24.8	481.4	271.9	343.4	620.9
60	51.5	50.9	8.6	23.2	468.6	273.7	341.0	631.4
61	67.7	34.3	9.9	22.4	489.3	272.6	358.8	649.9
62	83.9	48.1	11.2	23.0	481.8	296.7	382.6	701.5
63	105.8	67.5	12.5	20.5	487.2	306.9	405.2	731.3
64	99.9	90.3	12.7	21.6	530.1	300.2	412.6	734.9
65	87.7	113.8	16.5	21.7	560.8	287.7	418.5	744.5
66	94.5	145.7	15.3	22.4	598.7	300.9	454.1	787.3
67	89.7	156.9	13.1	21.8	597.1	310.1	468.2	810.1
68	117.2	124.9	15.2	26.9	638.9	344.6	516.4	909.4
69	138.1	119.7	15.9	28.3	647.8	388.8	561.3	985.9

APPENDIX I (Continued)

Industry / Year	25	26	27	28	29	30	31	32
50	$ 32.5	$ 63.9	$ 68.6	$ 27.2	$ 19.9	$ 35.4	$ 70.2	$ 10.5
51	43.7	103.4	68.3	35.6	25.5	44.2	80.2	11.5
52	54.9	142.9	67.9	44.1	31.1	52.9	90.2	12.5
53	66.0	182.4	67.6	52.5	36.7	61.7	100.2	13.4
54	83.0	257.0	63.3	78.7	50.3	84.6	110.1	13.9
55	92.4	278.3	70.2	86.1	54.9	88.9	127.1	18.0
56	103.0	298.8	70.1	84.0	59.4	94.7	134.1	19.7
57	118.3	331.9	68.9	88.0	65.6	96.9	147.3	19.8
58	123.4	373.2	64.3	91.0	61.0	105.7	149.2	16.4
59	135.3	413.5	66.7	97.7	62.1	114.6	155.2	19.3
60	152.3	445.0	66.3	100.1	69.7	114.8	173.8	20.4
61	154.2	474.2	63.5	105.7	70.8	120.9	173.3	18.7
62	158.9	507.1	63.3	113.1	80.3	128.1	185.8	18.8
63	165.7	526.2	64.4	117.5	82.2	133.1	194.9	20.6
64	161.8	654.8	60.2	132.8	98.4	151.3	207.0	22.5
65	173.2	673.6	58.5	145.0	102.5	152.5	205.9	23.2
66	199.7	721.1	61.3	164.2	109.3	173.4	220.2	25.7
67	215.5	724.8	60.2	176.2	121.7	169.7	239.2	25.1
68	257.9	784.1	58.2	196.7	127.7	209.0	260.3	30.1
69	279.0	823.7	75.1	211.6	135.2	237.9	278.2	35.9

APPENDIX I (Continued)

Industry Year	33	34	35	36	37*1	37[2]	37[3]	Gross State Product
50	$160.5	$ 30.0	$ 14.8	$172.3	$121.1	$ 30.0	$132.1	2749.5
51	160.0	34.3	15.3	175.8	136.0	108.1	152.1	3162.6
52	159.4	38.5	15.9	179.3	148.3	146.1	168.6	3459.0
53	158.9	42.8	16.5	185.0	153.4	141.9	175.5	3637.3
54	121.3	53.9	16.8	158.9	166.7	120.5	170.7	3724.5
55	143.1	42.5	19.4	183.1	173.9	119.6	191.0	4021.0
56	152.2	50.1	20.0	188.2	185.1	123.7	210.3	4366.3
57	165.1	55.0	18.7	205.3	188.4	127.9	233.7	4508.5
58	148.9	61.9	16.7	208.6	211.6	140.1	249.9	4761.0
59	166.8	77.2	18.0	243.9	218.7	142.1	260.0	5068.2
60	172.5	77.4	20.1	264.8	232.0	139.6	277.4	5300.7
61	187.0	81.6	20.9	284.5	245.1	137.1	304.6	5481.3
62	194.1	85.0	22.0	314.1	281.4	152.3	325.7	5712.1
63	214.2	84.8	20.4	344.2	281.5	156.4	344.0	6007.3
64	122.8	96.3	23.4	396.7	209.6	178.5	367.2	6240.8
65	125.8	91.3	22.7	404.1	322.7	184.5	406.5	6643.2
66	127.4	93.6	24.5	442.7	368.2	220.9	449.9	7205.8
67	129.5	96.1	22.3	485.2	411.4	281.3	505.2	7622.5
68	142.8	103.7	26.0	574.8	446.2	296.8	539.0	8143.6
69	152.0	116.1	26.3	653.7	481.6	301.9	596.7	8797.8

*The thirty-seventh government industry is divided into three sources of values-added: (1) value-added by federal employers; (2) value-added by state and local employers; (3) value-added by military personnel in Oklahoma.

APPENDIX II

FINAL BILL OF GOODS AND SERVICES INCLUDING INVENTORY CHANGE AND COEFFICIENTS OF PURCHASE ONLY LOCATION QUOTIENT, OKLAHOMA, 1965

No.	C+I+G+X(1)	Inventory Change	Location Quotient
1	59.677	-173.256	2.868
2	104.238	64.562	1.091
3	411.676	-10.248	0.742
4	20.662	14.555	0.240
5	1.321	22.878	0.000
6	15.953	1.385	0.325
7	4.675	28.631	0.199
8	35.270	35.035	0.814
9	34.066	31.603	0.204
10	290.440	-145.199	2.224
11	27.806	9.679	0.960
12	3.400	0.883	0.098
13	16.145	38.655	1.653
14	3.597	78.010	0.275
15	30.456	-62.921	0.927
16	185.169	-12.138	0.877
17	123.056	2.233	1.619
18	198.964	54.097	0.272
19	20.191	10.745	0.418
20	7.327	19.930	4.816
21	2.512	-954.810	5.367
22	520.458	-12.417	0.870
23	464.246	-163.099	1.447
24	850.459	-593.611	1.486
25	178.404	13.689	1.025
26	772.532	-313.968	0.837
27	35.585	31.485	0.732
28	93.588	8.422	0.768
29	60.742	26.790	2.198
30	103.960	14.199	2.345
31	202.147	-45.686	1.230
32	40.282	2.111	4.504
33	197.387	-1.046	3.025
34	65.600	69.396	0.341
35	25.663	6.566	0.428
36	521.859	-13.906	1.525

(1) C + I + G + X is the sum of the amount of consumption, investment, government expenditures and export.

APPENDIX III

VALUES OF ROW, COLUMN MULTIPLIERS, SUMS OF, ROW AND COLUMN COEFFICIENTS, ROW AND COLUMN COEFFICIENT RESIDUALS, 50 ITERATIONS WITH RAS METHOD, OKLAHOMA, 1965

First Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	2.1990	9.5271	0.9047	0.8032	0.0001	1.0000	175.300	59.677	635.600
2	1.1990	7.4495	0.9255	1.1511	0.0000	1.0000	252.200	104.238	418.400
3	0.4869	1.8550	0.9815	0.8285	0.0001	1.0000	157.000	411.676	505.300
4	1.4134	-7.6525	1.0765	0.9266	0.0000	1.0000	25.900	20.662	37.800
5	0.2014	-32.1494	1.3215	2.0949	-0.0000	1.0000	12.100	1.321	24.200
6	0.1927	-1.1515	1.0119	1.1658	0.0000	1.0000	8.700	15.953	17.400
7	0.3371	-30.7203	1.3072	1.8705	0.0001	1.0000	16.300	4.675	35.300
8	1.6039	-15.0256	1.1503	1.3635	0.0000	1.0000	66.200	35.270	125.700
9	0.2363	-15.0214	1.1902	1.5670	-0.0001	1.0000	19.500	34.066	69.500
10	0.8756	-4.2788	1.0428	0.3430	0.0003	1.0000	110.800	290.440	409.600
11	1.4311	-18.9090	1.1891	1.6512	-0.0000	1.0000	52.400	27.806	95.000
12	0.1735	-11.8680	1.1187	1.6147	-0.0002	1.0000	2.100	3.400	4.300
13	1.9640	-5.5254	1.0553	0.9897	0.0000	1.0000	103.800	16.145	196.400
14	0.4066	-21.2264	1.2123	1.6446	-0.0002	1.0000	46.400	3.597	95.000
15	2.3613	-16.7325	1.1673	1.3065	0.0000	1.0000	112.100	30.456	248.900
16	1.0305	-5.9005	1.0590	1.0633	0.0000	1.0000	139.200	185.169	304.100
17	0.8700	-8.9770	1.0898	1.0864	0.0000	1.0000	87.700	123.056	204.100
18	0.7342	-4.2647	1.0426	1.1259	0.0000	1.0000	113.800	198.964	275.900
19	0.6870	-16.7124	1.1671	1.2937	0.0000	1.0000	16.500	20.191	32.800
20	0.6875	-7.7869	1.0779	1.2320	0.0000	1.0000	21.700	7.327	37.900
21	4.3158	49.7999	0.5020	1.4020	0.0001	1.0000	560.800	2.512	999.300
22	0.1769	-3.1578	1.0316	0.9977	0.0	1.0000	287.700	520.458	551.700
23	1.0994	-3.6918	1.0369	1.1706	-0.0000	1.0000	418.500	464.246	559.700
24	0.9641	-3.7566	1.0376	1.7624	0.0000	1.0000	744.500	850.459	1007.600
25	0.3901	-16.3315	1.1633	1.7951	-0.0000	1.0000	173.200	178.404	250.300
26	0.3364	-9.8623	1.0986	1.9181	0.0001	1.0000	673.600	772.532	943.500
27	0.7734	-5.9934	1.0599	1.2972	0.0000	1.0000	58.500	35.585	83.000
28	1.1656	-6.5035	1.0650	1.2335	0.0000	1.0000	145.000	93.588	218.300
29	1.1724	-22.2881	1.2229	1.6630	-0.0000	1.0000	102.500	60.742	141.700
30	1.5357	-17.7778	1.1778	1.6612	-0.0000	1.0000	152.500	103.960	211.500
31	0.7285	-7.2024	1.0720	0.7667	0.0000	1.0000	205.900	202.147	327.900
32	2.2699	-3.8214	1.0382	1.7417	0.0001	1.0000	23.200	40.282	43.000
33	0.8020	-3.8824	1.0388	1.6762	-0.0000	1.0000	125.800	197.387	210.700
34	0.2837	-24.8076	1.2481	0.8258	0.0000	1.0000	91.300	65.600	152.700
35	0.3760	-19.2637	1.1926	2.1105	0.0000	1.0000	22.700	25.663	34.000
36	0.7563	-1.2055	1.0121	1.6598	-0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 12.28004 AVERAGE S-RESID= 0.00005

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Second Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	1.1175	3.0183	0.9698	0.9228	0.0	1.0000	175.300	59.677	635.600
2	1.1101	2.3259	0.9767	1.0402	0.0000	1.0000	252.200	104.238	418.400
3	1.1113	0.1018	0.9990	0.9445	0.0001	1.0000	157.000	411.676	505.300
4	0.8556	-10.1133	1.1011	1.1983	0.0	1.0000	25.500	20.662	37.800
5	0.7462	1.3433	0.9866	1.1955	0.0000	1.0000	12.100	1.321	24.200
6	0.8784	-1.5447	1.0154	1.2185	0.0000	1.0000	8.700	15.953	17.400
7	0.7385	-18.9127	1.1891	1.2436	0.0002	1.0000	16.300	4.675	35.300
8	0.8272	-18.3508	1.1835	1.2618	-0.0000	1.0000	66.200	35.270	125.700
9	0.7724	-7.8564	1.0786	1.1666	-0.0001	1.0000	19.500	34.066	69.500
10	0.8718	-3.6536	1.0365	0.5276	0.0004	1.0000	110.800	290.440	409.600
11	0.7891	-13.6481	1.1365	1.2366	-0.0000	1.0000	52.400	27.806	95.000
12	0.6382	-5.8482	1.0585	1.2012	-0.0001	1.0000	2.100	3.400	4.300
13	0.9432	-13.4083	1.1341	1.1268	0.0000	1.0000	103.800	16.145	196.400
14	0.8193	-16.3558	1.1636	1.1969	0.0	1.0000	46.400	3.597	95.000
15	0.8399	-14.8845	1.1488	1.2069	0.0000	1.0000	112.100	30.456	248.900
16	0.8669	-6.8117	1.0681	1.1880	0.0000	1.0000	139.200	185.169	304.100
17	0.8156	-7.6954	1.0770	1.2021	0.0000	1.0000	87.700	123.056	204.100
18	0.8674	-5.2443	1.0524	1.1821	0.0000	1.0000	113.800	198.964	275.900
19	0.6970	-10.4898	1.1049	1.2498	0.0000	1.0000	16.500	20.191	32.800
20	0.9120	-7.6158	1.0762	1.1880	0.0001	1.0000	21.700	7.327	37.900
21	1.9970	34.4793	0.6552	0.8550	0.0000	1.0000	560.800	2.512	999.300
22	0.6420	-0.6341	1.0063	1.1694	0.0001	1.0000	287.700	520.458	551.700
23	0.8221	-2.7545	1.0275	1.2568	-0.0000	1.0000	418.500	464.246	559.700
24	0.8059	-2.5786	1.0258	1.2934	0.0000	1.0000	744.500	850.459	1007.600
25	0.6375	-4.6323	1.0463	1.3603	0.0000	1.0000	173.200	178.404	250.300
26	0.6476	-2.5057	1.0251	1.1473	0.0001	1.0000	673.600	772.532	943.500
27	0.9050	-4.2834	1.0428	1.1725	0.0	1.0000	58.500	35.585	83.000
28	0.8578	-4.6525	1.0469	1.1576	0.0000	1.0000	145.000	93.588	218.300
29	0.7194	-12.8026	1.1280	1.4014	-0.0000	1.0000	102.500	60.742	141.700
30	0.7405	-8.3212	1.0832	1.3588	0.0000	1.0000	152.500	103.960	211.500
31	0.8419	-3.1470	1.0315	0.6625	0.0000	1.0000	205.900	202.147	327.900
32	0.6232	-1.6834	1.0168	1.3466	0.0001	1.0000	23.200	40.282	43.000
33	0.6154	-1.6575	1.0170	1.3335	0.0	1.0000	125.800	197.387	210.700
34	0.6969	-12.5367	1.1254	1.2410	-0.0000	1.0000	91.300	65.600	152.700
35	0.5600	-10.1927	1.1019	1.4711	0.0000	1.0000	22.700	25.663	34.000
36	0.7037	-0.6668	1.0067	1.2921	-0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 7.69088 AVERAGE S-RESID= 0.00005

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Third Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	1.0345	0.1066	0.9989	0.9809	-0.0002	1.0000	175.300	59.677	635.600
2	1.0320	0.1759	0.9982	1.0300	0.0000	1.0000	252.200	104.238	418.400
3	1.0055	-0.4327	1.0043	0.9951	-0.0001	1.0000	157.000	411.676	505.300
4	0.8176	-7.7636	1.0776	1.2104	0.0	1.0000	25.900	20.662	37.800
5	1.0144	4.1059	0.9589	1.0812	0.0000	1.0000	12.100	1.321	24.200
6	0.8433	-1.2132	1.0121	1.1559	-0.0000	1.0000	8.700	15.953	17.400
7	0.8210	-13.3753	1.1338	1.1567	0.0001	1.0000	16.300	4.675	35.300
8	0.7968	-13.0936	1.1309	1.2165	0.0	1.0000	66.200	35.270	125.700
9	0.8665	-5.6069	1.0561	1.1160	0.0001	1.0000	19.500	34.066	69.500
10	0.8884	-2.5816	1.0258	0.6652	0.0001	1.0000	110.800	290.440	409.600
11	0.8383	-9.9806	1.0998	1.1634	0.0000	1.0000	52.400	27.806	95.000
12	0.7816	-3.3418	1.0334	1.1326	0.0000	1.0000	2.100	3.400	4.300
13	0.8725	-11.7964	1.1180	1.1359	0.0000	1.0000	103.800	16.145	196.400
14	0.8547	-14.0916	1.1409	1.1525	0.0001	1.0000	46.400	3.597	95.000
15	0.8550	-12.2838	1.1228	1.1691	0.0000	1.0000	112.100	30.456	248.900
16	0.8517	-5.7412	1.0574	1.1711	0.0000	1.0000	139.200	185.169	304.100
17	0.8377	-5.6091	1.0561	1.1715	0.0	1.0000	87.700	123.056	204.100
18	0.8417	-4.6219	1.0462	1.1758	-0.0000	1.0000	113.800	198.964	275.900
19	0.7856	-6.3395	1.0634	1.1781	0.0001	1.0000	16.500	20.191	32.800
20	0.9137	-8.2230	1.0822	1.1384	0.0000	1.0000	21.700	7.327	37.900
21	1.5283	26.2312	0.7377	0.7995	0.0001	1.0000	560.800	2.512	999.300
22	0.8593	-0.1714	1.0017	1.1480	0.0001	1.0000	287.700	520.458	551.700
23	0.8592	-1.9404	1.0194	1.1499	0.0	1.0000	418.500	464.246	559.700
24	0.8561	-1.7309	1.0173	1.1477	0.0000	1.0000	744.500	850.459	1007.600
25	0.8611	-2.0763	1.0208	1.1751	0.0000	1.0000	173.200	178.404	250.300
26	0.8785	-1.0364	1.0104	1.0292	0.0001	1.0000	673.600	772.532	943.500
27	0.9302	-3.3072	1.0331	1.1046	0.0000	1.0000	58.500	35.585	83.000
28	0.9241	-3.5112	1.0351	1.1163	0.0000	1.0000	145.000	93.588	218.300
29	0.8169	-7.1749	1.0717	1.1938	0.0000	1.0000	102.500	60.742	141.700
30	0.8594	-4.8682	1.0487	1.1938	0.0000	1.0000	152.500	103.960	211.500
31	0.9242	-2.4232	1.0242	0.7207	0.0000	1.0000	205.900	202.147	327.900
32	0.7897	-0.8902	1.0089	1.1730	0.0001	1.0000	23.200	40.282	43.000
33	0.7882	-0.8542	1.0085	1.1749	0.0000	1.0000	125.800	197.387	210.700
34	0.8198	-7.1358	1.0714	1.2130	-0.0000	1.0000	91.300	65.600	152.700
35	0.7064	-5.0968	1.0510	1.2403	0.0000	1.0000	22.700	25.663	34.000
36	0.8117	-0.3771	1.0038	1.1544	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 5.53747 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Fourth Iteration

NU	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	1.0012	-1.2031	1.0120	1.0058	0.0001	1.0000	175.300	59.677	635.600
2	1.0023	-0.8218	1.0082	1.0309	0.0000	1.0000	252.200	104.238	418.400
3	0.9772	-0.5662	1.0057	1.0151	0.0	1.0000	157.000	411.676	505.300
4	0.8538	-5.5554	1.0556	1.1557	0.0000	1.0000	25.900	20.662	37.800
5	1.0454	2.5884	0.9741	1.0501	0.0000	1.0000	12.100	1.321	24.200
6	0.8727	-0.9185	1.0092	1.1162	0.0000	1.0000	8.700	15.953	17.400
7	0.8664	-9.4524	1.0945	1.1111	0.0000	1.0000	16.300	4.675	35.300
8	0.8460	-8.8375	1.0884	1.1485	-0.0000	1.0000	66.200	35.270	125.700
9	0.9009	-4.2388	1.0424	1.0782	0.0000	1.0000	19.500	34.066	69.500
10	0.9185	-1.8722	1.0187	0.7426	0.0001	1.0000	110.800	290.440	409.600
11	0.8763	-7.4565	1.0750	1.1157	-0.0000	1.0000	52.400	27.806	95.000
12	0.8623	-2.2032	1.0220	1.0948	0.0	1.0000	2.100	3.400	4.300
13	0.8861	-9.3621	1.0936	1.1125	-0.0000	1.0000	103.800	16.145	196.400
14	0.8722	-11.6460	1.1165	1.1260	-0.0000	1.0000	46.400	3.597	95.000
15	0.8772	-9.9083	1.0991	1.1362	0.0000	1.0000	112.100	30.456	248.900
16	0.8720	-4.6146	1.0461	1.1376	0.0000	1.0000	139.200	185.169	304.100
17	0.8762	-4.2494	1.0425	1.1334	0.0000	1.0000	87.700	123.056	204.100
18	0.8578	-3.7028	1.0370	1.1447	0.0000	1.0000	113.800	198.964	275.900
19	0.8564	-4.2540	1.0425	1.1282	0.0000	1.0000	16.500	20.191	32.800
20	0.9075	-7.2838	1.0728	1.1080	0.0001	1.0000	21.700	7.327	37.900
21	1.3568	20.9660	0.7903	0.8151	0.0000	1.0000	560.800	2.512	999.300
22	0.9706	-0.0728	1.0007	1.1122	0.0001	1.0000	287.700	520.458	551.700
23	0.8978	-1.4334	1.0143	1.0934	0.0000	1.0000	428.500	464.246	559.700
24	0.9001	-1.2662	1.0127	1.0921	0.0000	1.0000	744.500	850.459	1007.600
25	0.9326	-1.3264	1.0133	1.1026	0.0000	1.0000	173.200	178.404	250.300
26	0.9459	-0.6587	1.0066	1.0040	0.0001	1.0000	673.600	772.532	943.500
27	0.9483	-2.7745	1.0277	1.0665	0.0001	1.0000	58.500	35.585	83.000
28	0.9421	-2.8858	1.0289	1.0711	0.0	1.0000	145.000	93.588	218.300
29	0.8864	-4.5684	1.0457	1.1081	0.0000	1.0000	102.500	60.742	141.700
30	0.9126	-3.4337	1.0343	1.1084	0.0000	1.0000	152.500	103.960	211.500
31	0.9406	-1.9723	1.0197	0.7730	0.0000	1.0000	205.900	202.147	327.900
32	0.8766	-0.5699	1.0057	1.1065	0.0001	1.0000	23.200	40.282	43.000
33	0.8760	-0.5703	1.0057	1.1095	0.0000	1.0000	125.800	197.387	210.700
34	0.8888	-4.7364	1.0474	1.1470	-0.0000	1.0000	91.300	65.600	152.700
35	0.8279	-2.8397	1.0284	1.1304	0.0000	1.0000	22.700	25.663	34.000
36	0.8840	-0.2446	1.0024	1.0964	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 4.19714 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Fifth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9869	-1.7621	1.0176	1.0167	0.0002	1.0000	175.300	59.677	635.600
2	0.9852	-1.2596	1.0126	1.0312	0.0000	1.0000	252.200	104.238	418.400
3	0.9703	-0.5815	1.0058	1.0230	0.0001	1.0000	157.000	411.676	505.300
4	0.8908	-4.0544	1.0405	1.1112	0.0000	1.0000	25.900	20.662	37.800
5	1.0281	1.1655	0.9881	1.0397	0.0000	1.0000	12.100	1.321	24.200
6	0.9005	-0.7100	1.0071	1.0697	0.0001	1.0000	8.700	15.953	17.400
7	0.9018	-6.9225	1.0692	1.0821	0.0002	1.0000	16.300	4.675	35.300
8	0.8906	-6.1945	1.0619	1.1020	0.0000	1.0000	66.200	35.270	125.700
9	0.9232	-3.3047	1.0330	1.0534	0.0000	1.0000	19.500	34.066	69.500
10	0.9395	-1.4230	1.0142	0.7931	0.0002	1.0000	110.800	290.440	409.600
11	0.9041	-5.7956	1.0580	1.0907	0.0000	1.0000	52.400	27.806	95.000
12	0.9048	-1.6073	1.0161	1.0723	-0.0000	1.0000	2.100	3.400	4.300
13	0.9074	-7.3595	1.0740	1.0890	0.0000	1.0000	103.800	16.145	196.400
14	0.8920	-9.4006	1.0940	1.1015	0.0000	1.0000	46.400	3.597	95.000
15	0.8986	-7.9366	1.0794	1.1083	0.0000	1.0000	112.100	30.456	248.900
16	0.8945	-3.6778	1.0368	1.1089	0.0000	1.0000	139.200	185.169	304.100
17	0.9033	-3.3244	1.0332	1.1039	0.0000	1.0000	87.700	123.056	204.100
18	0.8828	-2.9138	1.0291	1.1145	-0.0000	1.0000	113.800	198.964	275.900
19	0.9004	-3.1000	1.0310	1.0962	0.0000	1.0000	16.500	20.191	32.800
20	0.9172	-6.0427	1.0604	1.0850	0.0001	1.0000	21.700	7.327	37.900
21	1.2661	17.1631	0.8284	0.8382	0.0001	1.0000	560.800	2.512	999.300
22	0.9873	-0.0420	1.0004	1.0661	0.0001	1.0000	287.700	520.458	551.700
23	0.9225	-1.1099	1.0111	1.0659	0.0000	1.0000	418.500	464.246	559.700
24	0.9249	-0.9773	1.0098	1.0650	0.0000	1.0000	744.500	850.459	1007.600
25	0.9559	-0.9565	1.0100	1.0656	-0.0000	1.0000	173.200	178.404	250.300
26	0.9649	-0.5061	1.0051	0.9959	0.0	1.0000	673.600	772.532	943.500
27	0.9537	-2.3485	1.0235	1.0451	0.0	1.0000	58.500	35.585	83.000
28	0.9519	-2.4146	1.0241	1.0471	0.0000	1.0000	145.000	93.588	218.300
29	0.9260	-3.2694	1.0327	1.0712	0.0000	1.0000	102.500	60.742	141.700
30	0.9367	-2.6385	1.0264	1.0714	0.0000	1.0000	152.500	103.960	211.500
31	0.9511	-1.6397	1.0164	0.8118	0.0000	1.0000	205.900	202.147	327.900
32	0.9173	-0.4096	1.0041	1.0753	0.0001	1.0000	23.200	40.282	43.000
33	0.9172	-0.4090	1.0041	1.0775	0.0001	1.0000	125.800	197.387	210.700
34	0.9233	-3.4699	1.0347	1.1020	0.0001	1.0000	91.300	65.600	152.700
35	0.8962	-1.8442	1.0184	1.0819	0.0000	1.0000	22.700	25.663	34.000
36	0.9215	-0.1771	1.0018	1.0678	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 3.27812 AVERAGE S-RESID= 0.00005

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Sixth Iteration

NO	R-VALUE	R-RESIC	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TCTL-OUTPT
1	0.9809	-1.9392	1.0194	1.0211	0.0001	1.0000	175.300	59.677	635.600
2	0.9835	-1.4014	1.0140	1.0300	0.0000	1.0000	252.200	104.238	418.400
3	0.9696	-0.5524	1.0055	1.0254	0.0	1.0000	157.000	411.676	505.300
4	0.9179	-3.0607	1.0306	1.0818	0.0000	1.0000	25.900	20.662	37.800
5	1.0127	0.2699	0.9973	1.0340	0.0	1.0000	12.100	1.321	24.200
6	0.9213	-0.5598	1.0056	1.0707	0.0000	1.0000	8.700	15.953	17.400
7	0.9261	-5.2738	1.0527	1.0631	0.0000	1.0000	16.300	4.675	35.300
8	0.9207	-4.5754	1.0456	1.0736	-0.0000	1.0000	66.200	35.270	125.700
9	0.9391	-2.6324	1.0263	1.0370	0.0001	1.0000	19.500	34.066	69.500
10	0.9534	-1.1123	1.0111	0.8300	0.0001	1.0000	110.800	290.440	409.600
11	0.9243	-4.5728	1.0457	1.0706	-0.0000	1.0000	52.400	27.806	95.000
12	0.9287	-1.2394	1.0124	1.0575	0.0000	1.0000	2.100	3.400	4.300
13	0.9254	-5.9143	1.0591	1.0706	0.0000	1.0000	103.800	16.145	196.400
14	0.9110	-7.5461	1.0755	1.0811	0.0	1.0000	46.400	3.597	95.000
15	0.9171	-6.3686	1.0637	1.0860	0.0000	1.0000	112.100	30.456	248.900
16	0.9140	-2.9379	1.0294	1.0663	0.0000	1.0000	139.200	185.169	304.100
17	0.9227	-2.6500	1.0265	1.0618	0.0000	1.0000	87.700	123.056	204.100
18	0.9054	-2.2996	1.0230	1.0904	0.0000	1.0000	113.800	198.964	275.900
19	0.9254	-2.3740	1.0237	1.0745	0.0000	1.0000	16.500	20.191	32.800
20	0.9303	-4.9350	1.0493	1.0675	0.0001	1.0000	21.700	7.327	37.900
21	1.2078	14.2155	0.8578	0.8603	0.0000	1.0000	560.800	2.512	999.300
22	0.9926	-0.0266	1.0003	1.0676	0.0001	1.0000	287.700	520.458	551.700
23	0.9389	-0.8836	1.0088	1.0496	0.0000	1.0000	418.500	464.246	559.700
24	0.9410	-0.7768	1.0078	1.0489	0.0001	1.0000	744.500	850.459	1007.600
25	0.9665	-0.7586	1.0080	1.0521	0.0000	1.0000	173.200	178.404	250.300
26	0.9728	-0.4155	1.0042	0.9919	0.0000	1.0000	673.600	772.532	943.500
27	0.9605	-1.9795	1.0198	1.0313	0.0000	1.0000	58.500	35.585	83.000
28	0.9594	-2.0216	1.0202	1.0323	0.0000	1.0000	145.000	93.588	218.300
29	0.9459	-2.5137	1.0251	1.0524	0.0000	1.0000	102.500	60.742	141.700
30	0.9507	-2.1179	1.0212	1.0525	0.0000	1.0000	152.500	103.960	211.500
31	0.9590	-1.3794	1.0138	0.8424	0.0000	1.0000	205.900	202.147	327.900
32	0.9351	-0.3127	1.0031	1.0573	0.0001	1.0000	23.200	40.282	43.000
33	0.9392	-0.3119	1.0031	1.0593	0.0000	1.0000	125.800	197.387	210.700
34	0.9427	-2.6813	1.0268	1.0742	0.0000	1.0000	91.300	65.600	152.700
35	0.9300	-1.3417	1.0134	1.0585	0.0000	1.0000	22.700	25.663	34.000
36	0.9420	-0.1366	1.0014	1.0514	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESIC= 2.61468 AVERAGE S-RESIC= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Seventh Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9750	-1.9151	1.0191	1.0220	-0.0000	1.0000	175.300	59.677	635.600
2	0.9817	-1.3873	1.0135	1.0277	0.0000	1.0000	252.200	104.238	418.400
3	0.9710	-0.5040	1.0050	1.0252	-0.0001	1.0000	157.000	411.676	505.300
4	0.9368	-2.3784	1.0238	1.0623	0.0000	1.0000	25.900	20.662	37.800
5	1.0025	-0.2658	1.0027	1.0256	0.0000	1.0000	12.100	1.321	24.200
6	0.9369	-0.4481	1.0045	1.0566	0.0000	1.0000	8.700	15.953	17.400
7	0.9427	-4.1423	1.0414	1.0495	-0.0000	1.0000	16.300	4.675	35.300
8	0.9402	-3.5275	1.0353	1.0557	0.0001	1.0000	66.200	35.270	125.700
9	0.9505	-2.1269	1.0213	1.0258	0.0000	1.0000	19.500	34.066	69.500
10	0.9632	-0.8824	1.0088	0.8585	0.0001	1.0000	110.800	290.440	409.600
11	0.9353	-3.6610	1.0366	1.0561	-0.0000	1.0000	52.400	27.806	95.000
12	0.9441	-0.9647	1.0098	1.0468	0.0000	1.0000	2.100	3.400	4.300
13	0.9355	-4.7757	1.0478	1.0566	0.0000	1.0000	103.800	16.145	196.400
14	0.9273	-6.0743	1.0607	1.0649	0.0000	1.0000	46.400	3.597	95.000
15	0.9323	-5.1381	1.0514	1.0687	0.0000	1.0000	112.100	30.456	248.900
16	0.9301	-2.3613	1.0236	1.0688	0.0000	1.0000	139.200	185.169	304.100
17	0.9374	-2.1376	1.0214	1.0652	0.0000	1.0000	87.700	123.056	204.100
18	0.9238	-1.8299	1.0183	1.0718	0.0001	1.0000	113.800	198.964	275.900
19	0.9418	-1.8723	1.0187	1.0585	0.0001	1.0000	16.500	20.191	32.800
20	0.9423	-4.0272	1.0403	1.0541	0.0001	1.0000	21.700	7.327	37.900
21	1.1662	11.8372	0.8816	0.8802	-0.0000	1.0000	560.800	2.512	999.300
22	0.9953	-0.0162	1.0002	1.0541	0.0001	1.0000	287.700	520.458	551.700
23	0.9507	-0.7147	1.0071	1.0387	0.0000	1.0000	418.500	464.246	559.700
24	0.9926	-0.6276	1.0063	1.0380	0.0000	1.0000	744.500	850.459	1007.600
25	0.9730	-0.6556	1.0066	1.0405	0.0000	1.0000	173.200	178.404	250.300
26	0.9776	-0.3479	1.0035	0.9895	0.0000	1.0000	673.600	772.532	943.500
27	0.9665	-1.6610	1.0166	1.0217	0.0000	1.0000	58.500	35.585	83.000
28	0.9658	-1.6883	1.0169	1.0225	0.0000	1.0000	145.000	93.588	218.300
29	0.9579	-2.0062	1.0201	1.0409	0.0000	1.0000	102.500	60.742	141.700
30	0.9600	-1.7371	1.0174	1.0410	0.0000	1.0000	152.500	103.960	211.500
31	0.9653	-1.1643	1.0116	0.8675	0.0	1.0000	205.900	202.147	327.900
32	0.9525	-0.2464	1.0025	1.0452	0.0000	1.0000	23.200	40.282	43.000
33	0.9530	-0.2457	1.0025	1.0466	0.0	1.0000	125.600	197.387	210.700
34	0.9551	-2.1316	1.0213	1.0564	0.0001	1.0000	91.300	65.600	152.700
35	0.9481	-1.0412	1.0104	1.0450	0.0000	1.0000	22.700	25.663	34.000
36	0.9546	-0.1092	1.0011	1.0407	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 2.12994 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Eighth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ACC	FNL-DEM	TOTL-OUTPT
1	0.9793	-1.7882	1.0179	1.0212	0.0001	1.0000	175.300	59.677	635.600
2	0.9819	-1.2944	1.0129	1.0249	0.0000	1.0000	252.200	104.238	418.400
3	0.9735	-0.4483	1.0045	1.0236	-0.0000	1.0000	157.000	411.676	505.300
4	0.9502	-1.8871	1.0189	1.0488	0.0000	1.0000	25.900	20.662	37.800
5	0.9972	-0.5595	1.0056	1.0258	0.0000	1.0000	12.100	1.321	24.200
6	0.9489	-0.3626	1.0036	1.0459	0.0000	1.0000	8.700	15.953	17.400
7	0.9544	-3.3152	1.0332	1.0402	0.0	1.0000	16.300	4.675	35.300
8	0.9523	-2.7992	1.0280	1.0437	0.0000	1.0000	66.200	35.270	125.700
9	0.9600	-1.7334	1.0173	1.0179	0.0001	1.0000	19.500	34.066	69.500
10	0.9706	-0.7055	1.0071	0.9823	0.0001	1.0000	110.800	290.440	409.600
11	0.9508	-2.9609	1.0296	1.0452	0.0001	1.0000	52.400	27.806	95.000
12	0.9951	-0.7954	1.0080	1.0386	0.0001	1.0000	2.100	3.400	4.300
13	0.9505	-3.8957	1.0390	1.0459	0.0000	1.0000	103.800	16.145	196.400
14	0.9406	-4.9170	1.0492	1.0523	-0.0000	1.0000	46.400	3.597	95.000
15	0.9447	-4.1708	1.0417	1.0553	0.0000	1.0000	112.100	30.456	248.900
16	0.9431	-1.9108	1.0191	1.0553	0.0000	1.0000	139.200	185.169	304.100
17	0.9489	-1.7384	1.0174	1.0524	0.0000	1.0000	87.700	123.056	204.100
18	0.9384	-1.4689	1.0147	1.0575	0.0000	1.0000	113.800	198.964	275.900
19	0.9536	-1.5028	1.0150	1.0473	0.0000	1.0000	16.500	20.191	32.800
20	0.9525	-3.2963	1.0330	1.0438	0.0001	1.0000	21.700	7.327	37.900
21	1.1346	9.8766	0.9012	0.8978	0.0000	1.0000	560.800	2.512	999.300
22	0.9971	-0.0087	1.0001	1.0438	0.0001	1.0000	287.700	520.458	551.700
23	0.9598	-0.5836	1.0058	1.0307	0.0000	1.0000	418.500	464.246	559.700
24	0.9613	-0.5119	1.0051	1.0301	0.0001	1.0000	744.500	850.459	1007.600
25	0.9777	-0.5424	1.0054	1.0330	0.0000	1.0000	173.200	178.404	250.300
26	0.9812	-0.2922	1.0029	0.9883	-0.0000	1.0000	673.600	772.532	943.500
27	0.9717	-1.3879	1.0139	1.0150	0.0	1.0000	58.500	35.585	83.000
28	0.9713	-1.4062	1.0141	1.0156	-0.0000	1.0000	145.000	93.588	218.300
29	0.9661	-1.6305	1.0163	1.0328	0.0000	1.0000	102.500	60.742	141.700
30	0.9670	-1.4387	1.0144	1.0329	0.0000	1.0000	152.500	103.960	211.500
31	0.9705	-0.9815	1.0098	0.8885	0.0000	1.0000	205.900	202.147	327.900
32	0.9625	-0.1977	1.0020	1.0364	-0.0000	1.0000	23.200	40.282	43.000
33	0.9626	-0.1971	1.0020	1.0376	0.0000	1.0000	125.800	197.387	210.700
34	0.9640	-1.7202	1.0172	1.0444	0.0000	1.0000	91.300	65.600	152.700
35	0.9553	-0.8350	1.0083	1.0360	0.0000	1.0000	22.700	25.663	34.000
36	0.9634	-0.0889	1.0009	1.0330	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 1.75705 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Ninth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9806	-1.6143	1.0161	1.0195	0.0	1.0000	175.300	59.677	635.600
2	0.9831	-1.1670	1.0117	1.0220	0.0000	1.0000	252.200	104.238	418.400
3	0.9764	-0.3917	1.0039	1.0214	-0.0000	1.0000	157.000	411.676	505.300
4	0.9800	-1.5182	1.0152	1.0389	0.0000	1.0000	25.900	20.662	37.800
5	0.9941	-0.6521	1.0065	1.0224	0.0000	1.0000	12.100	1.321	24.200
6	0.9582	-0.2957	1.0030	1.0375	0.0000	1.0000	8.700	15.953	17.400
7	0.9632	-2.6525	1.0269	1.0328	0.0000	1.0000	16.300	4.675	35.300
8	0.9625	-2.2604	1.0226	1.0350	0.0001	1.0000	66.200	35.270	125.700
9	0.9671	-1.4205	1.0142	1.0124	0.0001	1.0000	19.500	34.066	69.500
10	0.9763	-0.5668	1.0057	0.9917	0.0002	1.0000	110.800	290.440	409.600
11	0.9598	-2.4119	1.0241	1.0367	0.0000	1.0000	52.400	27.806	95.000
12	0.9634	-0.6486	1.0065	1.0320	0.0000	1.0000	2.100	3.400	4.300
13	0.9593	-3.1939	1.0319	1.0374	0.0	1.0000	103.800	16.145	196.400
14	0.9514	-4.0030	1.0400	1.0425	0.0001	1.0000	46.400	3.597	95.000
15	0.9546	-3.4042	1.0340	1.0446	0.0000	1.0000	112.100	30.456	248.900
16	0.9534	-1.5557	1.0156	1.0448	0.0000	1.0000	139.200	185.169	304.100
17	0.9561	-1.4221	1.0142	1.0425	-0.0000	1.0000	87.700	123.056	204.100
18	0.9500	-1.1883	1.0119	1.0464	0.0000	1.0000	113.800	198.964	275.900
19	0.9624	-1.2192	1.0122	1.0384	0.0000	1.0000	16.500	20.191	32.800
20	0.9607	-2.7070	1.0271	1.0357	0.0001	1.0000	21.700	7.327	37.900
21	1.1099	8.2428	0.9176	0.9132	0.0000	1.0000	560.800	2.512	999.300
22	0.9985	-0.0033	1.0000	1.0358	0.0001	1.0000	287.700	520.458	551.700
23	0.9669	-0.4791	1.0048	1.0247	0.0000	1.0000	418.500	464.246	559.700
24	0.9682	-0.4199	1.0042	1.0241	0.0000	1.0000	744.500	850.459	1007.600
25	0.9815	-0.4493	1.0045	1.0269	0.0000	1.0000	173.200	178.404	250.300
26	0.9841	-0.2449	1.0024	0.9879	-0.0000	1.0000	673.600	772.532	943.500
27	0.9763	-1.1560	1.0116	1.0101	0.0	1.0000	58.500	35.585	83.000
28	0.9760	-1.1686	1.0117	1.0106	0.0000	1.0000	145.000	93.588	218.300
29	0.9723	-1.3361	1.0134	1.0268	0.0000	1.0000	102.500	60.742	141.700
30	0.9725	-1.1960	1.0120	1.0268	0.0000	1.0000	152.500	103.960	211.500
31	0.9750	-0.8249	1.0082	0.9063	0.0000	1.0000	205.900	202.147	327.900
32	0.9697	-0.1601	1.0016	1.0256	-0.0001	1.0000	23.200	40.282	43.000
33	0.9698	-0.1597	1.0016	1.0306	0.0000	1.0000	125.800	197.387	210.700
34	0.9707	-1.3995	1.0140	1.0356	0.0001	1.0000	91.300	65.600	152.700
35	0.9671	-0.6801	1.0068	1.0294	0.0000	1.0000	22.700	25.663	34.000
36	0.9700	-0.0730	1.0007	1.0271	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 1.45461 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Tenth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9825	-1.4254	1.0143	1.0174	0.0001	1.0000	175.300	59.677	635.600
2	0.9847	-1.0292	1.0103	1.0191	0.0000	1.0000	252.200	104.238	418.400
3	0.9793	-0.3379	1.0034	1.0189	-0.0001	1.0000	157.000	411.676	505.300
4	0.9876	-1.2324	1.0123	1.0314	0.0000	1.0000	25.900	20.662	37.800
5	0.9927	-0.7282	1.0073	1.0193	0.0000	1.0000	12.100	1.321	24.200
6	0.9657	-0.2423	1.0024	1.0308	0.0000	1.0000	8.700	15.953	17.400
7	0.9695	-2.2001	1.0220	1.0269	0.0000	1.0000	16.300	4.675	35.300
8	0.9695	-1.8434	1.0184	1.0284	-0.0000	1.0000	66.200	35.270	125.700
9	0.9729	-1.1678	1.0117	1.0084	0.0	1.0000	19.500	34.066	69.500
10	0.9809	-0.4568	1.0046	0.9179	0.0001	1.0000	110.800	290.440	409.600
11	0.9670	-1.9743	1.0197	1.0300	-0.0000	1.0000	52.400	27.806	95.000
12	0.9699	-0.5317	1.0053	1.0267	0.0001	1.0000	2.100	3.400	4.300
13	0.9664	-2.6285	1.0263	1.0307	0.0000	1.0000	103.800	16.145	196.400
14	0.9601	-3.2749	1.0327	1.0347	-0.0001	1.0000	46.400	3.597	95.000
15	0.9627	-2.7908	1.0279	1.0365	0.0000	1.0000	112.100	30.456	248.900
16	0.9617	-1.2726	1.0127	1.0365	0.0000	1.0000	139.200	185.169	304.100
17	0.9654	-1.1680	1.0117	1.0347	-0.0000	1.0000	87.700	123.056	204.100
18	0.9951	-0.9674	1.0097	1.0378	0.0001	1.0000	113.800	198.964	275.900
19	0.9693	-0.9954	1.0100	1.0314	0.0000	1.0000	16.500	20.191	32.800
20	0.9675	-2.2293	1.0223	1.0293	0.0001	1.0000	21.700	7.327	37.900
21	1.0901	6.8752	0.9312	0.9266	0.0000	1.0000	560.800	2.512	999.300
22	0.9994	0.0004	1.0000	1.0294	0.0000	1.0000	287.700	520.458	551.700
23	0.9727	-0.3945	1.0039	1.0199	0.0000	1.0000	418.900	464.246	559.700
24	0.9738	-0.3455	1.0035	1.0194	0.0000	1.0000	744.500	850.459	1007.600
25	0.9846	-0.3718	1.0037	1.0222	0.0000	1.0000	173.200	178.404	250.300
26	0.9867	-0.2045	1.0020	0.9881	-0.0001	1.0000	673.600	772.532	943.500
27	0.9802	-0.9605	1.0096	1.0067	0.0	1.0000	58.500	35.585	83.000
28	0.9800	-0.9694	1.0097	1.0072	0.0000	1.0000	145.000	93.588	218.300
29	0.9771	-1.0985	1.0110	1.0219	0.0000	1.0000	102.500	60.742	141.700
30	0.9770	-0.9949	1.0099	1.0220	0.0000	1.0000	152.500	103.960	211.500
31	0.9785	-0.6909	1.0069	0.9213	0.0000	1.0000	205.900	202.147	327.900
32	0.9753	-0.1305	1.0013	1.0242	-0.0000	1.0000	23.200	40.282	43.000
33	0.9754	-0.1301	1.0013	1.0250	0.0000	1.0000	125.800	197.387	210.700
34	0.9761	-1.1436	1.0114	1.0289	0.0000	1.0000	91.300	65.600	152.700
35	0.9730	-0.5580	1.0056	1.0242	0.0000	1.0000	22.700	25.663	34.000
36	0.9752	-0.0602	1.0006	1.0224	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 1.20627 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Eleventh Iteration

NO	R-VALUE	R-RESID	RCOEFSUM	S-VALUE	S-RESID	SCOEFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9845	-1.2397	1.0124	1.0152	0.0	1.0000	175.300	59.677	635.600
2	0.9865	-0.8541	1.0085	1.0164	0.0000	1.0000	252.200	104.238	418.400
3	0.9821	-0.2887	1.0029	1.0164	-0.0000	1.0000	157.000	411.676	505.300
4	0.9735	-1.0060	1.0101	1.0256	0.0000	1.0000	25.900	20.662	37.800
5	0.9924	-0.7079	1.0071	1.0165	0.0000	1.0000	12.100	1.321	24.200
6	0.9717	-0.1992	1.0020	1.0254	0.0	1.0000	8.700	15.953	17.400
7	0.9753	-1.8047	1.0180	1.0222	0.0000	1.0000	16.200	4.675	35.300
8	0.9750	-1.5115	1.0151	1.0223	0.0000	1.0000	66.200	35.270	125.700
9	0.9776	-0.9619	1.0096	1.0056	-0.0000	1.0000	19.500	34.066	69.500
10	0.9845	-0.3691	1.0037	0.9315	0.0	1.0000	110.800	290.440	409.600
11	0.9728	-1.6215	1.0162	1.0246	-0.0000	1.0000	52.400	27.806	95.000
12	0.9752	-0.4373	1.0044	1.0222	0.0000	1.0000	2.100	3.400	4.300
13	0.9722	-2.1690	1.0217	1.0253	0.0000	1.0000	103.800	16.145	196.400
14	0.9671	-2.6892	1.0269	1.0284	0.0000	1.0000	46.400	3.597	95.000
15	0.9692	-2.2552	1.0230	1.0299	0.0000	1.0000	112.100	30.456	248.900
16	0.9685	-1.0452	1.0105	1.0295	0.0000	1.0000	139.200	185.169	304.100
17	0.9714	-0.9620	1.0096	1.0284	0.0000	1.0000	87.700	123.056	204.100
18	0.9665	-0.7913	1.0079	1.0305	0.0000	1.0000	113.800	198.964	275.900
19	0.9748	-0.8159	1.0082	1.0257	0.0001	1.0000	16.500	20.191	32.800
20	0.9731	-1.8395	1.0184	1.0241	0.0001	1.0000	21.700	7.327	37.900
21	1.0740	5.7291	0.9427	0.9382	0.0	1.0000	560.800	2.512	999.300
22	1.0001	0.0027	1.0000	1.0242	0.0001	1.0000	287.700	520.458	551.700
23	0.9774	-0.3254	1.0033	1.0161	0.0000	1.0000	418.500	464.246	559.700
24	0.9783	-0.2846	1.0028	1.0157	0.0	1.0000	744.500	850.459	1007.600
25	0.9872	-0.3072	1.0031	1.0183	0.0000	1.0000	173.200	178.404	250.300
26	0.9888	-0.1702	1.0017	0.9887	0.0000	1.0000	673.600	772.532	943.500
27	0.9835	-0.7968	1.0080	1.0043	-0.0000	1.0000	58.500	35.585	83.000
28	0.9833	-0.8030	1.0080	1.0047	0.0000	1.0000	145.000	93.588	218.300
29	0.9811	-0.9051	1.0091	1.0180	0.0	1.0000	102.500	60.742	141.700
30	0.9808	-0.8270	1.0083	1.0181	0.0000	1.0000	152.500	103.960	211.500
31	0.9823	-0.5768	1.0058	0.9341	0.0000	1.0000	205.900	202.147	327.900
32	0.9798	-0.1067	1.0011	1.0199	0.0001	1.0000	23.200	40.282	43.000
33	0.9798	-0.1064	1.0011	1.0205	0.0000	1.0000	125.800	197.387	210.700
34	0.9803	-0.9368	1.0094	1.0236	0.0000	1.0000	91.300	65.600	152.700
35	0.9777	-0.4553	1.0046	1.0195	0.0000	1.0000	22.700	25.663	34.000
36	0.9795	-0.0497	1.0005	1.0185	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 1.00099 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Twelfth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9865	-1.0666	1.0107	1.0132	-0.0001	1.0000	175.300	59.677	635.600
2	0.9882	-0.7687	1.0077	1.0140	0.0000	1.0000	252.200	104.238	418.400
3	0.9847	-0.2450	1.0024	1.0142	-0.0001	1.0000	157.000	411.676	505.300
4	0.9783	-0.8243	1.0082	1.0205	0.0000	1.0000	25.900	20.662	37.800
5	0.9926	-0.6571	1.0066	1.0140	0.0000	1.0000	12.100	1.321	24.200
6	0.9766	-0.1642	1.0016	1.0210	0.0000	1.0000	8.700	15.953	17.400
7	0.9796	-1.4840	1.0148	1.0183	0.0001	1.0000	16.300	4.675	35.300
8	0.9794	-1.2427	1.0124	1.0191	0.0000	1.0000	66.200	35.270	125.700
9	0.9815	-0.7933	1.0079	1.0037	0.0001	1.0000	19.500	34.066	69.500
10	0.9875	-0.2990	1.0030	0.9429	0.0001	1.0000	110.800	290.440	409.600
11	0.9776	-1.3346	1.0133	1.0203	0.0001	1.0000	52.400	27.806	95.000
12	0.9795	-0.3603	1.0036	1.0185	0.0000	1.0000	2.100	3.400	4.300
13	0.9769	-1.7921	1.0179	1.0208	0.0001	1.0000	103.800	16.145	196.400
14	0.9728	-2.2140	1.0221	1.0234	-0.0000	1.0000	46.400	3.597	95.000
15	0.9745	-1.8919	1.0189	1.0246	0.0000	1.0000	112.100	30.456	248.900
16	0.9740	-0.8606	1.0086	1.0246	0.0000	1.0000	139.200	185.169	304.100
17	0.9763	-0.7938	1.0079	1.0234	0.0000	1.0000	87.700	123.056	204.100
18	0.9724	-0.6495	1.0065	1.0253	0.0001	1.0000	113.800	198.964	275.900
19	0.9792	-0.6704	1.0067	1.0212	0.0000	1.0000	16.500	20.191	32.800
20	0.9777	-1.5158	1.0152	1.0198	0.0001	1.0000	21.700	7.327	37.900
21	1.0609	4.7652	0.9523	0.9481	0.0000	1.0000	560.600	2.512	999.300
22	1.0005	0.0040	1.0000	1.0200	0.0000	1.0000	287.700	520.458	551.700
23	0.9813	-0.2687	1.0027	1.0131	0.0000	1.0000	418.500	464.246	559.700
24	0.9821	-0.2350	1.0023	1.0127	0.0000	1.0000	744.500	850.459	1007.600
25	0.9854	-0.2534	1.0025	1.0151	-0.0000	1.0000	173.200	178.404	250.300
26	0.9907	-0.1412	1.0014	0.9856	0.0	1.0000	673.600	772.532	943.500
27	0.9862	-0.6601	1.0066	1.0027	0.0000	1.0000	58.500	35.585	83.000
28	0.9861	-0.6646	1.0066	1.0030	0.0000	1.0000	145.000	93.588	218.300
29	0.9844	-0.7458	1.0075	1.0149	0.0000	1.0000	102.500	60.742	141.700
30	0.9840	-0.6867	1.0069	1.0149	0.0000	1.0000	152.500	103.960	211.500
31	0.9852	-0.4803	1.0048	0.9449	0.0000	1.0000	205.900	202.147	327.900
32	0.9834	-0.0875	1.0009	1.0164	0.0	1.0000	23.200	40.282	43.000
33	0.9834	-0.0872	1.0009	1.0169	0.0000	1.0000	125.800	197.387	210.700
34	0.9838	-0.7686	1.0077	1.0194	0.0	1.0000	91.300	65.600	152.700
35	0.9816	-0.3786	1.0038	1.0165	0.0000	1.0000	22.700	25.663	34.000
36	0.9830	-0.0411	1.0004	1.0153	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.03066 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Thirteenth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9884	-0.9103	1.0091	1.0113	-0.0001	1.0000	175.300	59.677	635.600
2	0.9899	-0.6558	1.0066	1.0119	0.0000	1.0000	252.200	104.238	418.400
3	0.9869	-0.2068	1.0021	1.0121	-0.0001	1.0000	157.000	411.676	505.300
4	0.9821	-0.6769	1.0068	1.0172	0.0000	1.0000	25.900	20.662	37.800
5	0.9931	-0.5920	1.0059	1.0119	0.0000	1.0000	12.100	1.321	24.200
6	0.9806	-0.1355	1.0014	1.0173	0.0001	1.0000	8.700	15.953	17.400
7	0.9832	-1.2218	1.0122	1.0151	0.0000	1.0000	16.300	4.675	35.300
8	0.9830	-1.0233	1.0102	1.0157	0.0000	1.0000	66.200	35.270	125.700
9	0.9847	-0.6548	1.0065	1.0024	-0.0000	1.0000	19.500	34.066	69.500
10	0.9898	-0.2427	1.0024	0.9524	0.0001	1.0000	110.600	290.440	409.600
11	0.9815	-1.1002	1.0110	1.0167	0.0000	1.0000	52.400	27.806	95.000
12	0.9831	-0.2971	1.0030	1.0154	-0.0000	1.0000	2.100	3.400	4.300
13	0.9808	-1.4819	1.0148	1.0172	0.0000	1.0000	103.800	16.145	196.400
14	0.9775	-1.8262	1.0183	1.0192	0.0001	1.0000	46.400	3.597	95.000
15	0.9789	-1.5618	1.0156	1.0202	0.0000	1.0000	112.100	30.456	248.900
16	0.9785	-0.7098	1.0071	1.0202	0.0001	1.0000	139.200	185.169	304.100
17	0.9804	-0.6557	1.0066	1.0193	0.0000	1.0000	87.700	123.056	204.100
18	0.9772	-0.5345	1.0053	1.0208	0.0000	1.0000	113.600	198.964	275.900
19	0.9829	-0.5517	1.0055	1.0175	0.0000	1.0000	16.500	20.191	32.800
20	0.9815	-1.2565	1.0126	1.0164	0.0001	1.0000	21.700	7.327	37.900
21	1.0502	3.9660	0.9603	0.9566	-0.0000	1.0000	560.800	2.512	999.300
22	1.0007	0.0046	1.0000	1.0165	0.0001	1.0000	287.700	520.458	551.700
23	0.9845	-0.2220	1.0022	1.0106	0.0000	1.0000	418.500	464.246	559.700
24	0.9852	-0.1941	1.0019	1.0103	0.0000	1.0000	744.500	850.459	1007.600
25	0.9913	-0.2089	1.0021	1.0125	0.0000	1.0000	173.200	178.404	250.300
26	0.9923	-0.1170	1.0012	0.9906	-0.0001	1.0000	673.600	772.532	943.500
27	0.9886	-0.5464	1.0055	1.0016	0.0000	1.0000	58.500	35.585	83.000
28	0.9885	-0.5497	1.0055	1.0019	0.0000	1.0000	145.000	93.588	218.300
29	0.9871	-0.6146	1.0061	1.0122	0.0000	1.0000	102.500	60.742	141.700
30	0.9867	-0.5696	1.0057	1.0122	0.0000	1.0000	152.500	103.960	211.500
31	0.9876	-0.3990	1.0040	0.9540	0.0000	1.0000	205.900	202.147	327.900
32	0.9864	-0.0718	1.0007	1.0135	0.0001	1.0000	23.200	40.282	43.000
33	0.9864	-0.0716	1.0007	1.0139	0.0000	1.0000	125.800	197.387	210.700
34	0.9867	-0.6312	1.0063	1.0159	0.0000	1.0000	91.300	65.600	152.700
35	0.9848	-0.3121	1.0031	1.0136	0.0000	1.0000	22.700	25.663	34.000
36	0.9859	-0.0340	1.0003	1.0126	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.68510 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Fourteenth Iteration

NU	K-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9901	-0.7722	1.0077	1.0056	0.0001	1.0000	175.300	59.677	635.600
2	0.9913	-0.5562	1.0056	1.0100	0.0000	1.0000	252.200	104.238	418.400
3	0.9890	-0.1738	1.0017	1.0103	0.0002	1.0000	157.000	411.676	505.300
4	0.9853	-0.5567	1.0056	1.0141	0.0000	1.0000	25.900	20.662	37.800
5	0.9938	-0.5225	1.0052	1.0100	0.0001	1.0000	12.100	1.321	24.200
6	0.9840	-0.1119	1.0011	1.0143	0.0000	1.0000	8.700	15.953	17.400
7	0.9861	-1.0068	1.0101	1.0125	0.0000	1.0000	16.300	4.675	35.300
8	0.9860	-0.8434	1.0084	1.0129	0.0001	1.0000	66.200	35.270	125.700
9	0.9873	-0.5406	1.0054	1.0015	0.0000	1.0000	19.500	34.066	69.500
10	0.9917	-0.1975	1.0020	0.9604	0.0	1.0000	110.800	290.440	409.600
11	0.9847	-0.9078	1.0091	1.0138	0.0000	1.0000	52.400	27.806	95.000
12	0.9860	-0.2452	1.0025	1.0128	0.0	1.0000	2.100	3.400	4.300
13	0.9841	-1.2260	1.0123	1.0142	-0.0000	1.0000	103.800	16.145	196.400
14	0.9814	-1.5080	1.0151	1.0159	0.0	1.0000	46.400	3.597	95.000
15	0.9825	-1.2504	1.0125	1.0167	0.0001	1.0000	112.100	30.456	248.900
16	0.9822	-0.5861	1.0059	1.0167	0.0000	1.0000	139.200	185.169	304.100
17	0.9838	-0.5415	1.0054	1.0159	0.0001	1.0000	87.700	123.056	204.100
18	0.9812	-0.4405	1.0044	1.0172	0.0000	1.0000	113.800	198.964	275.900
19	0.9855	-0.4545	1.0045	1.0144	0.0001	1.0000	16.500	20.191	32.800
20	0.9847	-1.0352	1.0104	1.0135	0.0000	1.0000	21.700	7.327	37.900
21	1.0414	3.2952	0.9670	0.9637	0.0000	1.0000	560.800	2.512	999.300
22	1.0008	0.0047	1.0000	1.0137	0.0000	1.0000	287.700	520.458	551.700
23	0.9872	-0.1834	1.0018	1.0086	0.0000	1.0000	418.500	464.246	559.700
24	0.9877	-0.1603	1.0016	1.0084	0.0000	1.0000	744.500	850.459	1007.600
25	0.9928	-0.1720	1.0017	1.0103	0.0000	1.0000	173.200	178.404	250.300
26	0.9936	-0.0967	1.0010	0.9917	-0.0000	1.0000	673.600	772.532	943.500
27	0.9905	-0.4521	1.0045	1.0009	0.0000	1.0000	58.500	35.585	83.000
28	0.9905	-0.4545	1.0045	1.0011	0.0000	1.0000	145.000	93.588	218.300
29	0.9894	-0.5065	1.0051	1.0101	0.0000	1.0000	102.500	60.742	141.700
30	0.9885	-0.4720	1.0047	1.0101	0.0000	1.0000	152.500	103.960	211.500
31	0.9857	-0.3310	1.0033	0.9617	0.0000	1.0000	205.900	202.147	327.900
32	0.9888	-0.0590	1.0006	1.0111	0.0000	1.0000	23.200	40.282	43.000
33	0.9888	-0.0588	1.0006	1.0114	-0.0000	1.0000	125.800	197.387	210.700
34	0.9851	-0.5188	1.0052	1.0131	-0.0000	1.0000	91.300	65.600	152.700
35	0.9874	-0.2574	1.0026	1.0113	0.0000	1.0000	22.700	25.663	34.000
36	0.9883	-0.0281	1.0003	1.0104	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.57143 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Fifteenth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9915	-0.6522	1.0065	1.0081	0.0001	1.0000	175.300	59.677	635.600
2	0.9926	-0.4697	1.0047	1.0084	0.0000	1.0000	252.200	104.238	418.400
3	0.9907	-0.1457	1.0015	1.0087	0.0	1.0000	157.000	411.676	505.300
4	0.9875	-0.4583	1.0046	1.0116	0.0000	1.0000	25.900	20.662	37.800
5	0.9945	-0.4543	1.0045	1.0084	0.0001	1.0000	12.100	1.321	24.200
6	0.9867	-0.0525	1.0005	1.0119	0.0	1.0000	8.700	15.953	17.400
7	0.9985	-0.8302	1.0083	1.0104	0.0000	1.0000	16.300	4.675	35.300
8	0.9884	-0.6553	1.0070	1.0107	0.0001	1.0000	66.200	35.270	125.700
9	0.9855	-0.4465	1.0045	1.0005	-0.0001	1.0000	19.500	34.066	69.500
10	0.9933	-0.1610	1.0016	0.9871	-0.0001	1.0000	110.800	290.440	409.600
11	0.9873	-0.7494	1.0075	1.0114	0.0000	1.0000	52.400	27.806	95.000
12	0.9884	-0.2024	1.0020	1.0106	0.0001	1.0000	2.100	3.400	4.300
13	0.9868	-1.0143	1.0101	1.0117	0.0000	1.0000	103.800	16.145	196.400
14	0.9846	-1.2462	1.0125	1.0131	0.0000	1.0000	46.400	3.597	95.000
15	0.9855	-1.0668	1.0107	1.0138	0.0000	1.0000	112.100	30.456	248.900
16	0.9852	-0.4843	1.0048	1.0138	0.0000	1.0000	139.200	185.169	304.100
17	0.9865	-0.4481	1.0045	1.0131	0.0	1.0000	87.700	123.056	204.100
18	0.9844	-0.3635	1.0036	1.0142	0.0000	1.0000	113.800	198.964	275.900
19	0.9883	-0.3746	1.0037	1.0119	0.0000	1.0000	16.500	20.191	32.800
20	0.9873	-0.8596	1.0086	1.0111	0.0000	1.0000	21.700	7.327	37.900
21	1.0342	2.7357	0.9726	0.9697	0.0000	1.0000	560.800	2.512	999.300
22	1.0008	0.0045	1.0000	1.0113	0.0000	1.0000	287.700	520.458	551.700
23	0.9894	-0.1516	1.0015	1.0071	0.0000	1.0000	418.500	464.246	559.700
24	0.9898	-0.1324	1.0013	1.0068	0.0000	1.0000	744.500	850.459	1007.600
25	0.9940	-0.1416	1.0014	1.0085	0.0000	1.0000	173.200	178.404	250.300
26	0.9947	-0.0795	1.0008	0.9928	-0.0000	1.0000	673.600	772.532	943.500
27	0.9921	-0.3738	1.0037	1.0004	0.0001	1.0000	58.500	35.585	83.000
28	0.9921	-0.3757	1.0038	1.0006	0.0000	1.0000	145.000	93.588	218.300
29	0.9912	-0.4174	1.0042	1.0083	0.0000	1.0000	102.500	60.742	141.700
30	0.9908	-0.3908	1.0039	1.0083	0.0000	1.0000	152.500	103.960	211.500
31	0.9914	-0.2743	1.0027	0.9881	0.0000	1.0000	205.900	202.147	327.900
32	0.9908	-0.0485	1.0005	1.0092	0.0001	1.0000	23.200	40.282	43.000
33	0.9908	-0.0484	1.0005	1.0094	0.0000	1.0000	125.800	197.387	210.700
34	0.9910	-0.4267	1.0043	1.0108	0.0000	1.0000	91.300	65.600	152.700
35	0.9896	-0.2123	1.0021	1.0093	0.0000	1.0000	22.700	25.663	34.000
36	0.9903	-0.0232	1.0002	1.0086	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.47365 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

Sixteenth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9929	-0.5489	1.0055	1.0069	0.0001	1.0000	175.300	59.677	635.600
2	0.9938	-0.3954	1.0040	1.0070	0.0000	1.0000	252.200	104.238	418.400
3	0.9922	-0.1218	1.0012	1.0073	0.0000	1.0000	157.000	411.676	505.300
4	0.9900	-0.3776	1.0038	1.0096	0.0000	1.0000	25.900	20.662	37.800
5	0.9952	-0.3907	1.0039	1.0071	0.0001	1.0000	12.100	1.321	24.200
6	0.9890	-0.0764	1.0008	1.0098	0.0000	1.0000	8.700	15.953	17.400
7	0.9905	-0.6846	1.0068	1.0086	0.0000	1.0000	16.300	4.675	35.300
8	0.9904	-0.5735	1.0057	1.0088	0.0000	1.0000	66.200	35.270	125.700
9	0.9913	-0.3688	1.0037	1.0075	-0.0001	1.0000	19.500	34.066	69.500
10	0.9945	-0.1315	1.0013	0.9727	-0.0001	1.0000	110.800	290.440	409.600
11	0.9895	-0.6190	1.0062	1.0094	0.0001	1.0000	52.400	27.806	95.000
12	0.9904	-0.1671	1.0017	1.0088	-0.0000	1.0000	2.100	3.400	4.300
13	0.9891	-0.8392	1.0084	1.0097	0.0000	1.0000	103.800	16.145	196.400
14	0.9872	-1.0302	1.0103	1.0108	0.0000	1.0000	46.400	3.597	95.000
15	0.9880	-0.8822	1.0088	1.0114	0.0000	1.0000	112.100	30.456	248.900
16	0.9878	-0.4003	1.0040	1.0114	0.0000	1.0000	139.200	185.169	304.100
17	0.9888	-0.3705	1.0037	1.0106	0.0	1.0000	87.700	123.056	204.100
18	0.9871	-0.3001	1.0030	1.0117	0.0001	1.0000	113.800	198.964	275.900
19	0.9903	-0.3089	1.0031	1.0098	0.0000	1.0000	16.500	20.191	32.800
20	0.9895	-0.7113	1.0071	1.0092	0.0001	1.0000	21.700	7.327	37.900
21	1.0282	2.2698	0.9773	0.9748	0.0	1.0000	560.800	2.512	999.300
22	1.0008	0.0042	1.0000	1.0093	0.0000	1.0000	287.700	520.458	551.700
23	0.9912	-0.1253	1.0013	1.0058	0.0000	1.0000	418.500	464.246	559.700
24	0.9916	-0.1094	1.0011	1.0056	0.0000	1.0000	744.500	850.459	1007.600
25	0.9951	-0.1166	1.0012	1.0070	0.0000	1.0000	173.200	178.404	250.300
26	0.9956	-0.0660	1.0007	0.9937	0.0	1.0000	673.600	772.532	943.500
27	0.9935	-0.3092	1.0031	1.0001	0.0	1.0000	58.500	35.585	83.000
28	0.9935	-0.3105	1.0031	1.0073	0.0000	1.0000	145.000	93.588	218.300
29	0.9927	-0.3440	1.0034	1.0068	0.0000	1.0000	102.500	60.742	141.700
30	0.9924	-0.3233	1.0032	1.0068	0.0000	1.0000	152.500	103.960	211.500
31	0.9929	-0.2271	1.0023	0.9735	-0.0000	1.0000	205.900	202.147	327.900
32	0.9924	-0.0399	1.0004	1.0075	0.0001	1.0000	23.200	40.282	43.000
33	0.9924	-0.0398	1.0004	1.0078	0.0	1.0000	125.800	197.387	210.700
34	0.9926	-0.3512	1.0035	1.0089	0.0000	1.0000	91.300	65.600	152.700
35	0.9914	-0.1751	1.0017	1.0077	0.0000	1.0000	22.700	25.663	34.000
36	0.9920	-0.0191	1.0002	1.0071	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.39246 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

Seventeenth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TCTL-OUTPT
1	0.9940	-0.4607	1.0046	1.0058	0.0001	1.0000	175.300	59.677	635.600
2	0.9948	-0.3319	1.0033	1.0059	0.0000	1.0000	252.200	104.238	418.400
3	0.9935	-0.1017	1.0010	1.0061	-0.0001	1.0000	157.000	411.676	505.300
4	0.9917	-0.3113	1.0031	1.0079	0.0000	1.0000	25.900	20.662	37.800
5	0.9959	-0.3332	1.0033	1.0059	0.0001	1.0000	12.100	1.321	24.200
6	0.9909	-0.0632	1.0006	1.0081	0.0000	1.0000	8.700	15.953	17.400
7	0.9922	-0.5651	1.0057	1.0071	-0.0000	1.0000	16.300	4.675	35.300
8	0.9921	-0.4731	1.0047	1.0073	0.0000	1.0000	66.200	35.270	125.700
9	0.9928	-0.3047	1.0030	1.0002	0.0000	1.0000	19.500	34.066	69.500
10	0.9955	-0.1076	1.0011	0.9773	0.0001	1.0000	110.800	290.440	409.600
11	0.9912	-0.5113	1.0051	1.0078	0.0000	1.0000	52.400	27.806	95.000
12	0.9921	-0.1380	1.0014	1.0073	0.0000	1.0000	2.100	3.400	4.300
13	0.9909	-0.6942	1.0069	1.0080	0.0000	1.0000	103.800	16.145	196.400
14	0.9894	-0.8517	1.0085	1.0089	0.0000	1.0000	46.400	3.597	95.000
15	0.9900	-0.7295	1.0073	1.0094	0.0000	1.0000	112.100	30.456	248.900
16	0.9859	-0.3309	1.0033	1.0094	0.0000	1.0000	139.200	185.169	304.100
17	0.9908	-0.3064	1.0031	1.0090	0.0000	1.0000	87.700	123.056	204.100
18	0.9894	-0.2479	1.0025	1.0097	0.0000	1.0000	113.800	198.964	275.900
19	0.9920	-0.2549	1.0025	1.0081	0.0000	1.0000	16.500	20.191	32.800
20	0.9913	-0.5684	1.0059	1.0076	0.0000	1.0000	21.700	7.327	37.900
21	1.0233	1.8821	0.9812	0.9790	0.0	1.0000	560.800	2.512	999.300
22	1.0007	0.0038	1.0000	1.0077	0.0001	1.0000	287.700	520.458	551.700
23	0.9927	-0.1035	1.0010	1.0047	0.0000	1.0000	418.500	464.246	559.700
24	0.9930	-0.0904	1.0009	1.0045	0.0	1.0000	744.500	850.459	1007.600
25	0.9960	-0.0960	1.0010	1.0058	0.0000	1.0000	173.200	178.404	250.300
26	0.9964	-0.0545	1.0005	0.9946	0.0000	1.0000	673.600	772.532	943.500
27	0.9946	-0.2555	1.0026	0.9999	0.0000	1.0000	58.500	35.585	83.000
28	0.9946	-0.2566	1.0026	1.0001	0.0000	1.0000	145.000	93.588	218.300
29	0.9940	-0.2836	1.0028	1.0056	0.0000	1.0000	102.500	60.742	141.700
30	0.9937	-0.2674	1.0027	1.0056	0.0000	1.0000	152.500	103.960	211.500
31	0.9941	-0.1878	1.0019	0.9780	0.0	1.0000	205.900	202.147	327.900
32	0.9937	-0.0329	1.0003	1.0062	0.0000	1.0000	23.200	40.282	43.000
33	0.9937	-0.0328	1.0003	1.0064	0.0000	1.0000	125.800	197.387	210.700
34	0.9939	-0.2892	1.0029	1.0073	0.0000	1.0000	91.300	65.600	152.700
35	0.9925	-0.1444	1.0014	1.0064	0.0000	1.0000	22.700	25.663	34.000
36	0.9934	-0.0158	1.0002	1.0059	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.32506 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

Eighteenth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9949	-0.3858	1.0039	1.0048	0.0001	1.0000	175.300	59.677	635.600
2	0.9956	-0.2780	1.0028	1.0049	0.0000	1.0000	252.200	104.238	418.400
3	0.9945	-0.0648	1.0008	1.0051	-0.0000	1.0000	157.000	411.676	505.300
4	0.9932	-0.2567	1.0026	1.0065	0.0000	1.0000	25.900	20.662	37.800
5	0.9965	-0.2625	1.0028	1.0049	0.0000	1.0000	12.100	1.321	24.200
6	0.9925	-0.0522	1.0005	1.0067	0.0000	1.0000	8.700	15.953	17.400
7	0.9935	-0.4661	1.0047	1.0058	0.0	1.0000	16.300	4.675	35.300
8	0.9935	-0.3903	1.0039	1.0060	0.0	1.0000	66.200	35.270	125.700
9	0.9941	-0.2518	1.0025	1.0061	0.0001	1.0000	19.500	34.066	69.500
10	0.9963	-0.0881	1.0009	0.9812	0.0	1.0000	110.600	290.440	409.600
11	0.9928	-0.4225	1.0042	1.0064	0.0001	1.0000	52.400	27.806	95.000
12	0.9934	-0.1140	1.0011	1.0061	0.0000	1.0000	2.100	3.400	4.300
13	0.9925	-0.5743	1.0057	1.0066	0.0000	1.0000	103.800	16.145	196.400
14	0.9912	-0.7043	1.0070	1.0074	0.0000	1.0000	46.400	3.597	95.000
15	0.9918	-0.6033	1.0060	1.0078	0.0000	1.0000	112.100	30.456	248.900
16	0.9916	-0.2736	1.0027	1.0078	0.0000	1.0000	139.200	185.169	304.100
17	0.9923	-0.2534	1.0025	1.0074	0.0000	1.0000	87.700	123.056	204.100
18	0.9912	-0.2049	1.0020	1.0080	0.0000	1.0000	113.800	198.964	275.900
19	0.9934	-0.2103	1.0021	1.0067	0.0000	1.0000	16.500	20.191	32.800
20	0.9928	-0.4665	1.0045	1.0063	0.0	1.0000	21.700	7.327	37.900
21	1.0192	1.5598	0.9844	0.9826	0.0	1.0000	560.800	2.512	999.300
22	1.0007	0.0034	1.0000	1.0064	0.0001	1.0000	287.700	520.458	551.700
23	0.9940	-0.0856	1.0009	1.0039	0.0	1.0000	418.500	464.246	559.700
24	0.9942	-0.0747	1.0007	1.0037	0.0000	1.0000	744.500	850.455	1007.600
25	0.9967	-0.0791	1.0008	1.0048	0.0000	1.0000	173.200	178.404	250.300
26	0.9970	-0.0449	1.0004	0.9954	0.0000	1.0000	673.600	772.532	943.500
27	0.9955	-0.2112	1.0021	0.9998	0.0000	1.0000	58.500	35.585	83.000
28	0.9955	-0.2121	1.0021	0.9995	0.0000	1.0000	145.000	93.588	218.300
29	0.9951	-0.2338	1.0023	1.0046	0.0000	1.0000	102.500	60.742	141.700
30	0.9948	-0.2211	1.0022	1.0047	0.0000	1.0000	152.500	103.960	211.500
31	0.9951	-0.1553	1.0016	0.9817	0.0000	1.0000	205.500	202.147	327.900
32	0.9948	-0.0271	1.0003	1.0051	-0.0001	1.0000	23.200	40.282	43.000
33	0.9948	-0.0270	1.0003	1.0053	0.0	1.0000	125.800	197.387	210.700
34	0.9950	-0.2382	1.0024	1.0061	0.0000	1.0000	91.300	65.600	152.700
35	0.9941	-0.1191	1.0012	1.0052	0.0000	1.0000	22.700	25.663	34.000
36	0.9945	-0.0131	1.0001	1.0045	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.26913 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Nineteenth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9958	-0.3226	1.0032	1.0040	0.0	1.0000	175.300	59.677	635.600
2	0.9963	-0.2325	1.0023	1.0041	0.0000	1.0000	252.200	104.238	418.400
3	0.9954	-0.0706	1.0007	1.0043	-0.0001	1.0000	157.000	411.676	505.300
4	0.9944	-0.2118	1.0021	1.0054	0.0000	1.0000	25.900	20.662	37.800
5	0.9970	-0.2382	1.0024	1.0041	0.0000	1.0000	12.100	1.321	24.200
6	0.9938	-0.0432	1.0004	1.0056	0.0001	1.0000	8.700	15.953	17.400
7	0.9947	-0.3848	1.0038	1.0048	0.0000	1.0000	16.300	4.675	35.300
8	0.9946	-0.3221	1.0032	1.0049	0.0001	1.0000	66.200	35.270	125.700
9	0.9951	-0.2081	1.0021	1.0000	-0.0000	1.0000	19.500	34.066	69.500
10	0.9970	-0.0723	1.0007	0.9844	0.0	1.0000	110.800	290.440	409.600
11	0.9941	-0.3491	1.0035	1.0053	-0.0000	1.0000	52.400	27.806	95.000
12	0.9946	-0.0942	1.0009	1.0050	0.0000	1.0000	2.100	3.400	4.300
13	0.9938	-0.4750	1.0047	1.0055	-0.0000	1.0000	103.800	16.145	196.400
14	0.9927	-0.5624	1.0058	1.0061	0.0	1.0000	46.400	3.597	95.000
15	0.9932	-0.4989	1.0050	1.0064	0.0000	1.0000	112.100	30.456	248.900
16	0.9931	-0.2262	1.0023	1.0064	0.0001	1.0000	139.200	185.169	304.100
17	0.9937	-0.2095	1.0021	1.0061	0.0000	1.0000	87.700	123.056	204.100
18	0.9927	-0.1693	1.0017	1.0066	0.0	1.0000	113.600	198.964	275.900
19	0.9946	-0.1736	1.0017	1.0056	0.0000	1.0000	16.500	20.191	32.800
20	0.9940	-0.4025	1.0040	1.0052	0.0000	1.0000	21.700	7.327	37.900
21	1.0155	1.2921	0.9871	0.9856	-0.0000	1.0000	560.600	2.512	999.300
22	1.0006	0.0029	1.0000	1.0053	0.0001	1.0000	287.700	520.458	551.700
23	0.9950	-0.0707	1.0007	1.0032	0.0000	1.0000	418.500	464.246	559.700
24	0.9952	-0.0618	1.0006	1.0030	0.0000	1.0000	744.500	850.459	1007.600
25	0.9973	-0.0652	1.0007	1.0035	0.0000	1.0000	173.200	178.404	250.300
26	0.9975	-0.0371	1.0004	0.9961	0.0	1.0000	673.600	772.532	943.500
27	0.9963	-0.1747	1.0017	0.9998	0.0	1.0000	58.500	35.585	83.000
28	0.9963	-0.1752	1.0018	0.9995	0.0000	1.0000	145.000	93.588	218.300
29	0.9959	-0.1928	1.0019	1.0038	0.0000	1.0000	102.500	60.742	141.700
30	0.9957	-0.1828	1.0018	1.0038	0.0000	1.0000	152.500	103.960	211.500
31	0.9960	-0.1284	1.0013	0.9849	0.0000	1.0000	205.900	202.147	327.900
32	0.9957	-0.0223	1.0002	1.0042	0.0	1.0000	23.200	40.282	43.000
33	0.9957	-0.0223	1.0002	1.0044	0.0000	1.0000	125.800	197.387	210.700
34	0.9958	-0.1963	1.0020	1.0050	0.0000	1.0000	91.300	65.600	152.700
35	0.9952	-0.0583	1.0010	1.0043	0.0000	1.0000	22.700	25.663	34.000
36	0.9955	-0.0108	1.0001	1.0040	-0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.22279 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Twentieth Iteration

NU	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FAL-DEM	TCTL-OUTPT
1	0.9965	-0.2693	1.0027	1.0034	0.0	1.0000	175.300	59.677	635.600
2	0.9969	-0.1943	1.0019	1.0034	0.0000	1.0000	252.200	104.238	418.400
3	0.9962	-0.0587	1.0006	1.0036	0.0	1.0000	157.000	411.676	505.300
4	0.9954	-0.1749	1.0017	1.0044	0.0000	1.0000	25.900	20.662	37.800
5	0.9975	-0.2001	1.0020	1.0034	0.0000	1.0000	12.100	1.321	24.200
6	0.9948	-0.0357	1.0004	1.0046	0.0001	1.0000	8.700	15.953	17.400
7	0.9956	-0.3176	1.0032	1.0040	0.0	1.0000	16.300	4.675	35.300
8	0.9955	-0.2658	1.0027	1.0041	0.0001	1.0000	66.200	35.270	125.700
9	0.9959	-0.1718	1.0017	0.9999	0.0001	1.0000	19.500	34.066	69.500
10	0.9975	-0.0594	1.0006	0.9871	0.0001	1.0000	110.800	290.440	409.600
11	0.9951	-0.2684	1.0029	1.0044	0.0000	1.0000	52.400	27.806	95.000
12	0.9955	-0.0778	1.0008	1.0042	-0.0001	1.0000	2.100	3.400	4.300
13	0.9949	-0.3928	1.0039	1.0045	0.0000	1.0000	103.800	16.145	196.400
14	0.9940	-0.4815	1.0048	1.0051	0.0000	1.0000	46.400	3.597	95.000
15	0.9943	-0.4126	1.0041	1.0053	0.0000	1.0000	112.100	30.456	248.900
16	0.9942	-0.1871	1.0019	1.0053	0.0000	1.0000	139.200	185.169	304.100
17	0.9948	-0.1732	1.0017	1.0051	0.0001	1.0000	87.700	123.056	204.100
18	0.9940	-0.1399	1.0014	1.0055	0.0001	1.0000	113.800	198.964	275.900
19	0.9955	-0.1433	1.0014	1.0046	0.0000	1.0000	16.500	20.191	32.800
20	0.9950	-0.3328	1.0033	1.0043	0.0	1.0000	21.700	7.327	37.900
21	1.0131	1.0701	0.9893	0.9880	-0.0000	1.0000	560.800	2.512	999.300
22	1.0005	0.0025	1.0000	1.0044	0.0000	1.0000	287.700	520.458	551.700
23	0.9959	-0.0585	1.0006	1.0026	0.0000	1.0000	418.500	464.246	559.700
24	0.9961	-0.0510	1.0005	1.0025	0.0	1.0000	744.500	850.459	1007.600
25	0.9977	-0.0537	1.0005	1.0032	0.0000	1.0000	173.200	178.404	250.300
26	0.9980	-0.0306	1.0003	0.9967	0.0	1.0000	673.600	772.532	943.500
27	0.9970	-0.1443	1.0014	0.9998	-0.0000	1.0000	58.500	35.585	83.000
28	0.9969	-0.1449	1.0014	0.9998	0.0000	1.0000	145.000	93.588	218.300
29	0.9966	-0.1590	1.0016	1.0032	0.0000	1.0000	102.500	60.742	141.700
30	0.9964	-0.1511	1.0015	1.0032	0.0000	1.0000	152.500	103.960	211.500
31	0.9967	-0.1062	1.0011	0.9874	0.0	1.0000	205.900	202.147	327.900
32	0.9965	-0.0184	1.0002	1.0035	0.0000	1.0000	23.200	40.282	43.000
33	0.9965	-0.0184	1.0002	1.0036	0.0000	1.0000	125.800	197.387	210.700
34	0.9966	-0.1619	1.0016	1.0041	0.0000	1.0000	91.300	65.600	152.700
35	0.9960	-0.0811	1.0008	1.0036	0.0000	1.0000	22.700	25.663	34.000
36	0.9963	-0.0089	1.0001	1.0033	-0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.16438 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Twenty-first Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9970	-0.2245	1.0022	1.0028	0.0002	1.0000	175.300	59.677	635.600
2	0.9974	-0.1620	1.0016	1.0028	0.0000	1.0000	252.200	104.238	418.400
3	0.9968	-0.0488	1.0005	1.0030	0.0	1.0000	157.000	411.676	505.300
4	0.9962	-0.1443	1.0014	1.0037	0.0000	1.0000	25.900	20.662	37.800
5	0.9979	-0.1676	1.0017	1.0028	0.0000	1.0000	12.100	1.321	24.200
6	0.9957	-0.0295	1.0003	1.0038	0.0000	1.0000	8.700	15.953	17.400
7	0.9964	-0.2623	1.0026	1.0033	-0.0001	1.0000	16.300	4.675	35.300
8	0.9963	-0.2195	1.0022	1.0034	0.0000	1.0000	66.200	35.270	125.700
9	0.9966	-0.1421	1.0014	0.9999	0.0000	1.0000	19.500	34.066	69.500
10	0.9960	-0.0488	1.0005	0.9893	-0.0001	1.0000	110.800	290.440	409.600
11	0.9959	-0.2384	1.0024	1.0036	-0.0000	1.0000	52.400	27.806	95.000
12	0.9963	-0.0643	1.0006	1.0034	0.0001	1.0000	2.100	3.400	4.300
13	0.9957	-0.3246	1.0032	1.0037	0.0001	1.0000	103.800	16.145	196.400
14	0.9950	-0.3981	1.0040	1.0042	0.0001	1.0000	46.400	3.597	95.000
15	0.9953	-0.3411	1.0034	1.0044	0.0000	1.0000	112.100	30.456	248.900
16	0.9952	-0.1546	1.0015	1.0044	0.0001	1.0000	139.200	185.169	304.100
17	0.9957	-0.1432	1.0014	1.0042	0.0000	1.0000	87.700	123.056	204.100
18	0.9950	-0.1156	1.0012	1.0045	0.0000	1.0000	113.800	198.964	275.900
19	0.9963	-0.1183	1.0012	1.0038	0.0000	1.0000	16.500	20.191	32.800
20	0.9959	-0.2752	1.0028	1.0035	0.0000	1.0000	21.700	7.327	37.900
21	1.0108	0.8660	0.9911	0.9901	-0.0000	1.0000	560.800	2.512	999.300
22	1.0004	0.0022	1.0000	1.0036	0.0000	1.0000	287.700	520.458	551.700
23	0.9966	-0.0483	1.0005	1.0021	0.0000	1.0000	418.500	464.246	559.700
24	0.9967	-0.0422	1.0004	1.0020	0.0000	1.0000	744.500	850.459	1007.600
25	0.9981	-0.0443	1.0004	1.0027	0.0000	1.0000	173.200	178.404	250.300
26	0.9963	-0.0253	1.0003	0.9973	0.0	1.0000	673.600	772.532	943.500
27	0.9975	-0.1193	1.0012	0.9998	-0.0000	1.0000	58.500	35.585	83.000
28	0.9975	-0.1197	1.0012	0.9998	0.0000	1.0000	145.000	93.588	218.300
29	0.9972	-0.1313	1.0013	1.0026	0.0000	1.0000	102.500	60.742	141.700
30	0.9970	-0.1249	1.0012	1.0026	0.0000	1.0000	152.500	103.960	211.500
31	0.9972	-0.0878	1.0009	0.9896	0.0	1.0000	205.500	202.147	327.900
32	0.9971	-0.0152	1.0002	1.0029	0.0	1.0000	23.200	40.282	43.000
33	0.9971	-0.0151	1.0002	1.0030	0.0001	1.0000	125.800	197.387	210.700
34	0.9972	-0.1335	1.0013	1.0034	0.0000	1.0000	91.300	65.600	152.700
35	0.9967	-0.0670	1.0007	1.0030	-0.0000	1.0000	22.700	25.663	34.000
36	0.9969	-0.0074	1.0001	1.0027	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.15257 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Twenty-second Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9979	-0.1870	1.0019	1.0023	0.0001	1.0000	175.300	59.677	635.600
2	0.9978	-0.1350	1.0013	1.0024	0.0000	1.0000	252.200	104.238	418.400
3	0.9974	-0.0406	1.0004	1.0025	0.0000	1.0000	157.000	411.676	505.300
4	0.9968	-0.1192	1.0012	1.0030	0.0000	1.0000	25.900	20.662	37.800
5	0.9982	-0.1399	1.0014	1.0023	0.0001	1.0000	12.100	1.321	24.200
6	0.9965	-0.0244	1.0002	1.0032	0.0000	1.0000	8.700	15.953	17.400
7	0.9970	-0.2167	1.0022	1.0027	0.0000	1.0000	16.300	4.675	35.300
8	0.9970	-0.1812	1.0018	1.0028	0.0000	1.0000	66.200	35.270	125.700
9	0.9972	-0.1174	1.0012	0.9999	0.0000	1.0000	19.500	34.066	69.500
10	0.9983	-0.0402	1.0004	0.9912	0.0	1.0000	110.800	290.440	409.600
11	0.9966	-0.1971	1.0020	1.0030	0.0001	1.0000	52.400	27.806	95.000
12	0.9965	-0.0531	1.0005	1.0029	-0.0000	1.0000	2.100	3.400	4.300
13	0.9965	-0.2686	1.0027	1.0031	0.0000	1.0000	103.800	16.145	196.400
14	0.9959	-0.3292	1.0033	1.0035	0.0000	1.0000	46.400	3.597	95.000
15	0.9961	-0.2821	1.0028	1.0036	0.0000	1.0000	112.100	30.456	248.900
16	0.9961	-0.1279	1.0013	1.0036	0.0000	1.0000	139.200	185.169	304.100
17	0.9964	-0.1184	1.0012	1.0035	0.0001	1.0000	87.700	123.056	204.100
18	0.9959	-0.0956	1.0010	1.0037	0.0000	1.0000	113.800	198.964	275.900
19	0.9969	-0.0977	1.0010	1.0031	0.0001	1.0000	16.800	20.191	32.800
20	0.9966	-0.2276	1.0023	1.0029	0.0001	1.0000	21.700	7.327	37.900
21	1.0090	0.7334	0.9927	0.9918	0.0000	1.0000	560.800	2.512	999.300
22	1.0004	0.0018	1.0000	1.0030	0.0001	1.0000	287.700	520.458	551.700
23	0.9972	-0.0400	1.0004	1.0018	-0.0000	1.0000	418.500	464.246	559.700
24	0.9973	-0.0345	1.0003	1.0017	-0.0000	1.0000	744.500	850.459	1007.600
25	0.9985	-0.0366	1.0004	1.0022	0.0000	1.0000	173.200	178.404	250.300
26	0.9986	-0.0205	1.0002	0.9977	0.0	1.0000	673.600	772.532	943.500
27	0.9979	-0.0986	1.0010	0.9998	0.0000	1.0000	58.500	35.585	83.000
28	0.9979	-0.0990	1.0010	0.9998	0.0000	1.0000	145.000	93.588	218.300
29	0.9977	-0.1083	1.0011	1.0022	0.0000	1.0000	102.500	60.742	141.700
30	0.9976	-0.1032	1.0010	1.0022	0.0000	1.0000	152.500	103.960	211.500
31	0.9977	-0.0725	1.0007	0.9914	0.0000	1.0000	205.900	202.147	327.900
32	0.9976	-0.0125	1.0001	1.0024	0.0000	1.0000	23.200	40.282	43.000
33	0.9976	-0.0125	1.0001	1.0025	0.0	1.0000	125.800	197.387	210.700
34	0.9977	-0.1102	1.0011	1.0028	0.0000	1.0000	91.300	65.600	152.700
35	0.9973	-0.0553	1.0006	1.0024	0.0000	1.0000	22.700	25.663	34.000
36	0.9974	-0.0061	1.0001	1.0023	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.12624 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Twenty-third Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9979	-0.1557	1.0016	1.0020	0.0	1.0000	175.300	59.677	635.600
2	0.9982	-0.1124	1.0011	1.0020	0.0000	1.0000	252.200	104.238	418.400
3	0.9978	-0.0337	1.0003	1.0021	0.0001	1.0000	157.000	411.676	505.300
4	0.9974	-0.0583	1.0010	1.0025	0.0000	1.0000	25.900	20.662	37.800
5	0.9985	-0.1167	1.0012	1.0019	0.0001	1.0000	12.100	1.321	24.200
6	0.9971	-0.0202	1.0002	1.0026	0.0000	1.0000	8.700	15.953	17.400
7	0.9975	-0.1789	1.0018	1.0023	0.0000	1.0000	16.300	4.675	35.300
8	0.9975	-0.1497	1.0015	1.0023	0.0000	1.0000	66.200	35.270	125.700
9	0.9977	-0.0971	1.0010	0.9995	0.0001	1.0000	19.500	34.066	69.500
10	0.9986	-0.0331	1.0003	0.9927	0.0001	1.0000	110.800	290.440	409.600
11	0.9972	-0.1629	1.0016	1.0025	0.0	1.0000	52.400	27.806	95.000
12	0.9975	-0.0439	1.0004	1.0024	0.0001	1.0000	2.100	3.400	4.300
13	0.9971	-0.2221	1.0022	1.0026	0.0	1.0000	103.800	16.145	196.400
14	0.9966	-0.2722	1.0027	1.0029	0.0000	1.0000	46.400	3.597	95.000
15	0.9968	-0.2332	1.0023	1.0030	0.0001	1.0000	112.100	30.456	248.900
16	0.9967	-0.1057	1.0011	1.0030	0.0001	1.0000	139.200	185.169	304.100
17	0.9970	-0.0979	1.0010	1.0029	0.0000	1.0000	87.700	123.056	204.100
18	0.9966	-0.0790	1.0008	1.0031	0.0000	1.0000	113.800	198.964	275.900
19	0.9975	-0.0807	1.0008	1.0026	0.0	1.0000	16.500	20.191	32.800
20	0.9972	-0.1882	1.0019	1.0024	0.0	1.0000	21.700	7.327	37.900
21	1.0074	0.6070	0.9939	0.9932	-0.0000	1.0000	560.800	2.512	999.300
22	1.0003	0.0015	1.0000	1.0025	0.0001	1.0000	287.700	520.458	551.700
23	0.9977	-0.0330	1.0003	1.0014	0.0000	1.0000	418.500	464.246	559.700
24	0.9978	-0.0288	1.0003	1.0014	0.0000	1.0000	744.500	850.459	1007.600
25	0.9987	-0.0302	1.0003	1.0018	0.0000	1.0000	173.200	178.404	250.300
26	0.9988	-0.0172	1.0002	0.9981	0.0	1.0000	673.600	772.532	943.500
27	0.9983	-0.0816	1.0008	0.9998	0.0000	1.0000	58.500	35.585	83.000
28	0.9983	-0.0818	1.0008	0.9998	0.0000	1.0000	145.000	93.588	218.300
29	0.9981	-0.0894	1.0009	1.0018	0.0000	1.0000	102.500	60.742	141.700
30	0.9980	-0.0853	1.0009	1.0018	0.0000	1.0000	152.500	103.960	211.500
31	0.9981	-0.0599	1.0006	0.9929	-0.0000	1.0000	205.900	202.147	327.900
32	0.9980	-0.0104	1.0001	1.0020	0.0	1.0000	23.200	40.282	43.000
33	0.9980	-0.0103	1.0001	1.0020	0.0	1.0000	125.800	197.387	210.700
34	0.9981	-0.0909	1.0009	1.0023	0.0001	1.0000	91.300	65.600	152.700
35	0.9978	-0.0456	1.0005	1.0020	0.0000	1.0000	22.700	25.663	34.000
36	0.9979	-0.0050	1.0000	1.0019	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.10444 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Twenty-fourth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9983	-0.1296	1.0013	1.0016	0.0000	1.0000	175.300	59.677	635.600
2	0.9985	-0.0935	1.0009	1.0016	0.0000	1.0000	252.200	104.238	418.400
3	0.9982	-0.0280	1.0003	1.0017	0.0000	1.0000	157.000	411.676	505.300
4	0.9978	-0.0813	1.0008	1.0021	0.0000	1.0000	25.900	20.662	37.800
5	0.9988	-0.0972	1.0010	1.0016	0.0001	1.0000	12.100	1.321	24.200
6	0.9976	-0.0167	1.0002	1.0022	0.0000	1.0000	8.700	15.953	17.400
7	0.9979	-0.1478	1.0015	1.0019	0.0000	1.0000	16.300	4.675	35.300
8	0.9979	-0.1237	1.0012	1.0019	0.0000	1.0000	66.200	35.270	125.700
9	0.9981	-0.0803	1.0008	0.9999	-0.0000	1.0000	19.500	34.066	69.500
10	0.9985	-0.0273	1.0003	0.9939	-0.0002	1.0000	110.800	290.440	409.600
11	0.9977	-0.1346	1.0013	1.0020	-0.0000	1.0000	52.400	27.806	95.000
12	0.9979	-0.0363	1.0004	1.0020	0.0000	1.0000	2.100	3.400	4.300
13	0.9976	-0.1837	1.0018	1.0021	0.0000	1.0000	103.800	16.145	196.400
14	0.9972	-0.2250	1.0022	1.0024	0.0000	1.0000	46.400	3.597	95.000
15	0.9973	-0.1928	1.0019	1.0025	0.0001	1.0000	112.100	30.456	248.900
16	0.9973	-0.0874	1.0009	1.0025	0.0	1.0000	139.200	185.169	304.100
17	0.9975	-0.0805	1.0008	1.0024	0.0000	1.0000	87.700	123.056	204.100
18	0.9972	-0.0653	1.0007	1.0025	0.0000	1.0000	113.800	198.964	275.900
19	0.9979	-0.0667	1.0007	1.0021	0.0000	1.0000	16.500	20.191	32.800
20	0.9977	-0.1556	1.0016	1.0020	0.0000	1.0000	21.700	7.327	37.900
21	1.0061	0.5021	0.9950	0.9944	-0.0000	1.0000	560.800	2.512	999.300
22	1.0003	0.0013	1.0000	1.0020	0.0001	1.0000	287.700	520.458	551.700
23	0.9981	-0.0273	1.0003	1.0012	0.0000	1.0000	418.500	464.246	559.700
24	0.9982	-0.0238	1.0002	1.0011	0.0	1.0000	744.500	850.459	1007.600
25	0.9990	-0.0249	1.0002	1.0015	0.0000	1.0000	173.200	178.404	250.300
26	0.9990	-0.0142	1.0001	0.9984	-0.0001	1.0000	673.600	772.532	943.500
27	0.9986	-0.0674	1.0007	0.9998	0.0000	1.0000	58.500	35.585	83.000
28	0.9986	-0.0677	1.0007	0.9999	-0.0000	1.0000	145.000	93.588	218.300
29	0.9984	-0.0735	1.0007	1.0015	0.0000	1.0000	102.500	60.742	141.700
30	0.9983	-0.0705	1.0007	1.0015	0.0000	1.0000	152.500	103.960	211.500
31	0.9984	-0.0496	1.0005	0.9941	0.0	1.0000	205.900	202.147	327.900
32	0.9984	-0.0086	1.0001	1.0016	-0.0000	1.0000	23.200	40.282	43.000
33	0.9984	-0.0085	1.0001	1.0017	0.0000	1.0000	125.800	197.387	210.700
34	0.9984	-0.0751	1.0008	1.0019	0.0001	1.0000	91.300	65.600	152.700
35	0.9981	-0.0377	1.0004	1.0017	0.0000	1.0000	22.700	25.663	34.000
36	0.9983	-0.0042	1.0000	1.0015	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.0004C AVERAGE S-RESID= 0.0C004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Twenty-fifth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9986	-0.1077	1.0011	1.0014	0.0001	1.0000	175.300	59.677	635.600
2	0.9988	-0.0778	1.0008	1.0014	0.0000	1.0000	252.200	104.238	418.400
3	0.9985	-0.0232	1.0002	1.0014	0.0001	1.0000	157.000	411.676	505.300
4	0.9982	-0.0671	1.0007	1.0017	0.0000	1.0000	25.900	20.662	37.800
5	0.9990	-0.0810	1.0008	1.0013	0.0000	1.0000	12.100	1.321	24.200
6	0.9980	-0.0138	1.0001	1.0018	0.0000	1.0000	8.700	15.953	17.400
7	0.9983	-0.1224	1.0012	1.0015	0.0000	1.0000	16.300	4.675	35.300
8	0.9983	-0.1021	1.0010	1.0016	0.0001	1.0000	66.200	35.270	125.700
9	0.9984	-0.0663	1.0007	0.9999	0.0	1.0000	19.500	34.066	69.500
10	0.9991	-0.0225	1.0002	0.9990	0.0002	1.0000	110.600	290.440	409.600
11	0.9981	-0.1112	1.0011	1.0017	-0.0000	1.0000	52.400	27.806	95.000
12	0.9983	-0.0300	1.0003	1.0016	0.0000	1.0000	2.100	3.400	4.300
13	0.9980	-0.1520	1.0015	1.0018	0.0001	1.0000	103.800	16.145	196.400
14	0.9977	-0.1861	1.0019	1.0020	0.0000	1.0000	46.400	3.597	95.000
15	0.9978	-0.1594	1.0016	1.0021	0.0000	1.0000	112.100	30.456	248.900
16	0.9978	-0.0722	1.0007	1.0021	0.0000	1.0000	139.200	185.169	304.100
17	0.9980	-0.0665	1.0007	1.0020	0.0001	1.0000	87.700	123.056	204.100
18	0.9977	-0.0540	1.0005	1.0021	0.0001	1.0000	113.800	198.964	275.900
19	0.9983	-0.0551	1.0006	1.0018	0.0	1.0000	16.500	20.191	32.800
20	0.9981	-0.1288	1.0013	1.0017	0.0001	1.0000	21.700	7.327	37.900
21	1.0051	0.4156	0.9958	0.9953	0.0000	1.0000	560.800	2.512	999.300
22	1.0002	0.0011	1.0000	1.0017	0.0	1.0000	287.700	520.458	551.700
23	0.9984	-0.0226	1.0002	1.0010	0.0000	1.0000	418.500	464.246	559.700
24	0.9985	-0.0197	1.0002	1.0009	0.0000	1.0000	744.500	850.459	1007.600
25	0.9991	-0.0206	1.0002	1.0012	0.0000	1.0000	173.200	178.404	250.300
26	0.9992	-0.0118	1.0001	0.9987	0.0000	1.0000	673.600	772.532	943.500
27	0.9988	-0.0557	1.0006	0.9998	-0.0000	1.0000	58.500	35.585	83.000
28	0.9988	-0.0560	1.0006	0.9999	0.0000	1.0000	145.000	93.588	218.300
29	0.9987	-0.0610	1.0006	1.0012	0.0000	1.0000	102.500	60.742	141.700
30	0.9986	-0.0583	1.0006	1.0012	0.0000	1.0000	152.500	103.960	211.500
31	0.9987	-0.0410	1.0004	0.9951	0.0	1.0000	205.900	202.147	327.900
32	0.9986	-0.0071	1.0001	1.0013	0.0001	1.0000	23.200	40.282	43.000
33	0.9987	-0.0070	1.0001	1.0014	0.0	1.0000	125.800	197.387	210.700
34	0.9987	-0.0621	1.0006	1.0016	0.0000	1.0000	91.300	65.600	152.700
35	0.9985	-0.0312	1.0003	1.0014	0.0000	1.0000	22.700	25.663	34.000
36	0.9986	-0.0034	1.0000	1.0013	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.07149 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Twenty-sixth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9988	-0.0895	1.0009	1.0011	0.0000	1.0000	175.300	59.677	635.600
2	0.9990	-0.0648	1.0006	1.0011	0.0000	1.0000	252.200	104.238	418.400
3	0.9987	-0.0193	1.0002	1.0012	0.0002	1.0000	157.000	411.676	505.300
4	0.9985	-0.0555	1.0006	1.0014	0.0000	1.0000	25.900	20.662	37.800
5	0.9991	-0.0671	1.0007	1.0011	0.0000	1.0000	12.100	1.321	24.200
6	0.9983	-0.0114	1.0001	1.0015	0.0000	1.0000	8.700	15.953	17.400
7	0.9986	-0.1009	1.0010	1.0013	0.0000	1.0000	16.300	4.675	35.300
8	0.9986	-0.0845	1.0008	1.0013	0.0000	1.0000	66.200	35.270	125.700
9	0.9987	-0.0549	1.0005	0.9999	0.0001	1.0000	19.500	34.066	69.500
10	0.9992	-0.0186	1.0002	0.9999	0.0002	1.0000	110.800	290.440	409.600
11	0.9984	-0.0921	1.0009	1.0014	0.0	1.0000	52.400	27.806	95.000
12	0.9986	-0.0248	1.0002	1.0013	0.0001	1.0000	2.100	3.400	4.300
13	0.9983	-0.1256	1.0013	1.0014	0.0001	1.0000	103.800	16.145	196.400
14	0.9981	-0.1539	1.0015	1.0016	0.0	1.0000	46.400	3.597	95.000
15	0.9982	-0.1318	1.0013	1.0017	0.0000	1.0000	112.100	30.456	248.900
16	0.9982	-0.0598	1.0006	1.0017	0.0000	1.0000	139.200	185.169	304.100
17	0.9983	-0.0553	1.0006	1.0016	0.0001	1.0000	87.700	123.056	204.100
18	0.9981	-0.0446	1.0004	1.0017	-0.0000	1.0000	113.800	158.964	275.900
19	0.9986	-0.0455	1.0005	1.0015	0.0000	1.0000	16.500	20.191	32.800
20	0.9984	-0.1063	1.0011	1.0014	0.0000	1.0000	21.700	7.327	37.900
21	1.0042	0.3437	0.9966	0.9961	0.0000	1.0000	560.800	2.512	999.300
22	1.0002	0.0009	1.0000	1.0014	0.0000	1.0000	287.700	520.458	551.700
23	0.9987	-0.0187	1.0002	1.0008	0.0000	1.0000	418.500	464.246	559.700
24	0.9987	-0.0163	1.0002	1.0008	0.0000	1.0000	744.500	850.459	1007.600
25	0.9993	-0.0170	1.0002	1.0010	0.0000	1.0000	173.200	178.404	250.300
26	0.9994	-0.0097	1.0001	0.9989	0.0	1.0000	673.600	772.532	943.500
27	0.9990	-0.0461	1.0005	0.9999	0.0000	1.0000	58.500	35.585	83.000
28	0.9990	-0.0463	1.0005	0.9999	0.0000	1.0000	145.000	93.588	218.300
29	0.9989	-0.0504	1.0005	1.0010	0.0000	1.0000	102.500	60.742	141.700
30	0.9989	-0.0482	1.0005	1.0010	0.0000	1.0000	152.500	103.960	211.500
31	0.9989	-0.0339	1.0003	0.9990	-0.0000	1.0000	205.900	202.147	327.900
32	0.9989	-0.0058	1.0001	1.0011	0.0000	1.0000	23.200	40.282	43.000
33	0.9985	-0.0058	1.0001	1.0011	0.0000	1.0000	125.800	197.387	210.700
34	0.9989	-0.0513	1.0005	1.0013	0.0	1.0000	91.300	65.600	152.700
35	0.9987	-0.0257	1.0003	1.0011	0.0000	1.0000	22.700	25.663	34.000
36	0.9988	-0.0028	1.0000	1.0011	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.05913 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Twenty-seventh Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9990	-0.0743	1.0007	1.0009	0.0002	1.0000	175.300	59.677	635.600
2	0.9991	-0.0536	1.0005	1.0009	0.0000	1.0000	252.200	104.238	418.400
3	0.9990	-0.0160	1.0002	1.0010	0.0002	1.0000	157.000	411.676	505.300
4	0.9988	-0.0459	1.0005	1.0012	0.0000	1.0000	25.900	20.662	37.800
5	0.9993	-0.0558	1.0006	1.0009	0.0000	1.0000	12.100	1.321	24.200
6	0.9986	-0.0094	1.0001	1.0012	0.0000	1.0000	8.700	15.953	17.400
7	0.9988	-0.0834	1.0008	1.0011	0.0000	1.0000	16.300	4.675	35.300
8	0.9988	-0.0658	1.0007	1.0011	0.0001	1.0000	66.200	35.270	125.700
9	0.9985	-0.0454	1.0005	0.9999	0.0000	1.0000	19.500	34.066	69.500
10	0.9994	-0.0154	1.0002	0.9966	0.0	1.0000	110.800	290.440	409.600
11	0.9987	-0.0760	1.0008	1.0012	0.0001	1.0000	52.400	27.806	95.000
12	0.9988	-0.0205	1.0002	1.0011	0.0000	1.0000	2.100	3.400	4.300
13	0.9986	-0.1039	1.0010	1.0012	0.0001	1.0000	103.800	16.145	196.400
14	0.9984	-0.1272	1.0013	1.0013	0.0001	1.0000	46.400	3.597	95.000
15	0.9985	-0.1090	1.0011	1.0014	0.0	1.0000	112.100	30.456	248.900
16	0.9985	-0.0494	1.0005	1.0014	0.0000	1.0000	139.200	185.169	304.100
17	0.9986	-0.0457	1.0005	1.0013	0.0000	1.0000	87.700	123.056	204.100
18	0.9984	-0.0369	1.0004	1.0014	0.0001	1.0000	113.800	198.964	275.900
19	0.9988	-0.0376	1.0004	1.0012	0.0000	1.0000	16.500	20.191	32.800
20	0.9987	-0.0881	1.0009	1.0011	0.0000	1.0000	21.700	7.327	37.900
21	1.0035	0.2843	0.9972	0.9968	0.0	1.0000	960.800	2.512	999.300
22	1.0002	0.0007	1.0000	1.0012	0.0000	1.0000	287.700	520.458	551.700
23	0.9989	-0.0154	1.0002	1.0007	0.0000	1.0000	418.500	464.246	559.700
24	0.9990	-0.0135	1.0001	1.0006	0.0000	1.0000	744.500	850.459	1007.600
25	0.9994	-0.0140	1.0001	1.0005	0.0000	1.0000	173.200	178.404	250.300
26	0.9995	-0.0081	1.0001	0.9991	0.0001	1.0000	673.600	772.532	943.500
27	0.9992	-0.0382	1.0004	0.9999	0.0001	1.0000	58.500	35.585	83.000
28	0.9992	-0.0383	1.0004	0.9995	-0.0000	1.0000	145.000	93.588	218.300
29	0.9991	-0.0416	1.0004	1.0008	-0.0000	1.0000	102.500	60.742	141.700
30	0.9991	-0.0398	1.0004	1.0008	0.0000	1.0000	152.500	103.960	211.500
31	0.9991	-0.0280	1.0003	0.9967	0.0000	1.0000	205.900	202.147	327.900
32	0.9991	-0.0048	1.0000	1.0009	0.0	1.0000	23.200	40.282	43.000
33	0.9991	-0.0048	1.0000	1.0005	0.0000	1.0000	125.800	197.387	210.700
34	0.9991	-0.0424	1.0004	1.0011	0.0000	1.0000	91.300	65.600	152.700
35	0.9990	-0.0213	1.0002	1.0009	0.0000	1.0000	22.700	25.663	34.000
36	0.9990	-0.0023	1.0000	1.0005	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.04891 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Twenty-eighth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9992	-0.0618	1.0006	1.0008	-0.0001	1.0000	175.300	59.677	635.600
2	0.9993	-0.0448	1.0004	1.0008	0.0000	1.0000	252.200	104.238	418.400
3	0.9991	-0.0133	1.0001	1.0008	0.0003	1.0000	157.000	411.676	505.300
4	0.9990	-0.0379	1.0004	1.0010	0.0000	1.0000	25.900	20.662	37.800
5	0.9994	-0.0463	1.0005	1.0008	0.0000	1.0000	12.100	1.321	24.200
6	0.9989	-0.0078	1.0001	1.0010	0.0000	1.0000	8.700	15.953	17.400
7	0.9990	-0.0692	1.0007	1.0009	-0.0000	1.0000	16.300	4.675	35.300
8	0.9990	-0.0577	1.0006	1.0009	0.0000	1.0000	66.200	35.270	125.700
9	0.9991	-0.0375	1.0004	0.9999	0.0000	1.0000	19.500	34.066	69.500
10	0.9995	-0.0127	1.0001	0.9972	0.0001	1.0000	110.800	290.440	409.600
11	0.9989	-0.0630	1.0006	1.0010	0.0001	1.0000	52.400	27.806	95.000
12	0.9990	-0.0170	1.0002	1.0009	0.0	1.0000	2.100	3.400	4.300
13	0.9989	-0.0859	1.0009	1.0010	0.0000	1.0000	103.800	16.145	196.400
14	0.9987	-0.1052	1.0011	1.0011	0.0000	1.0000	46.400	3.597	95.000
15	0.9988	-0.0901	1.0009	1.0012	0.0001	1.0000	112.100	30.456	248.900
16	0.9987	-0.0409	1.0004	1.0012	0.0000	1.0000	139.200	185.169	304.100
17	0.9988	-0.0378	1.0004	1.0011	0.0001	1.0000	87.700	123.056	204.100
18	0.9987	-0.0305	1.0003	1.0012	0.0000	1.0000	113.800	198.964	275.900
19	0.9990	-0.0311	1.0003	1.0010	0.0	1.0000	16.500	20.191	32.800
20	0.9989	-0.0727	1.0007	1.0009	0.0001	1.0000	21.700	7.327	37.900
21	1.0025	0.2351	0.9976	0.9974	0.0	1.0000	560.800	2.512	599.300
22	1.0001	0.0006	1.0000	1.0010	0.0001	1.0000	287.700	520.458	551.700
23	0.9991	-0.0128	1.0001	1.0006	0.0000	1.0000	418.500	464.246	559.700
24	0.9991	-0.0111	1.0001	1.0005	0.0000	1.0000	744.500	850.459	1007.600
25	0.9995	-0.0116	1.0001	1.0007	0.0000	1.0000	173.200	178.404	250.300
26	0.9996	-0.0067	1.0001	0.9992	0.0001	1.0000	673.600	772.532	943.500
27	0.9993	-0.0316	1.0003	0.9999	0.0000	1.0000	58.500	35.585	83.000
28	0.9993	-0.0317	1.0003	0.9999	0.0000	1.0000	145.000	93.588	218.300
29	0.9993	-0.0344	1.0003	1.0007	0.0	1.0000	102.500	60.742	141.700
30	0.9992	-0.0329	1.0003	1.0007	0.0000	1.0000	152.500	103.960	211.500
31	0.9993	-0.0232	1.0002	0.9972	0.0	1.0000	205.900	202.147	327.900
32	0.9992	-0.0040	1.0000	1.0008	-0.0000	1.0000	23.200	40.282	43.000
33	0.9992	-0.0040	1.0000	1.0006	0.0000	1.0000	125.800	197.387	210.700
34	0.9993	-0.0350	1.0003	1.0009	0.0	1.0000	91.300	65.600	152.700
35	0.9991	-0.0176	1.0002	1.0008	0.0000	1.0000	22.700	25.663	34.000
36	0.9992	-0.0019	1.0000	1.0007	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.04048 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Twenty-ninth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9993	-0.0514	1.0005	1.0006	-0.0000	1.0000	175.300	59.677	635.600
2	0.9994	-0.0272	1.0004	1.0006	0.0000	1.0000	252.200	104.238	418.400
3	0.9993	-0.0110	1.0001	1.0007	0.0001	1.0000	157.000	411.676	505.300
4	0.9992	-0.0314	1.0003	1.0008	0.0000	1.0000	25.900	20.662	37.800
5	0.9995	-0.0385	1.0004	1.0006	0.0001	1.0000	12.100	1.321	24.200
6	0.9991	-0.0064	1.0001	1.0008	0.0000	1.0000	8.700	15.953	17.400
7	0.9992	-0.0572	1.0006	1.0007	0.0000	1.0000	16.300	4.675	35.300
8	0.9992	-0.0477	1.0005	1.0007	0.0000	1.0000	66.200	35.270	125.700
9	0.9993	-0.0310	1.0003	0.9995	-0.0001	1.0000	19.500	34.066	69.500
10	0.9996	-0.0105	1.0001	0.9977	0.0	1.0000	110.800	290.440	409.600
11	0.9991	-0.0520	1.0005	1.0008	0.0000	1.0000	52.400	27.806	95.000
12	0.9992	-0.0140	1.0001	1.0008	0.0001	1.0000	2.100	3.400	4.300
13	0.9991	-0.0711	1.0007	1.0008	0.0000	1.0000	103.800	16.145	196.400
14	0.9989	-0.0870	1.0009	1.0009	0.0000	1.0000	46.400	3.597	95.000
15	0.9990	-0.0746	1.0007	1.0010	0.0000	1.0000	112.100	30.456	248.900
16	0.9990	-0.0338	1.0003	1.0010	0.0001	1.0000	139.200	185.169	304.100
17	0.9990	-0.0313	1.0003	1.0009	0.0001	1.0000	87.700	123.056	204.100
18	0.9989	-0.0252	1.0003	1.0010	0.0000	1.0000	113.800	198.964	275.900
19	0.9992	-0.0257	1.0003	1.0008	0.0000	1.0000	16.500	20.191	32.800
20	0.9991	-0.0603	1.0006	1.0008	0.0000	1.0000	21.700	7.327	37.900
21	1.0024	0.1943	0.9981	0.9978	0.0	1.0000	560.800	2.512	999.300
22	1.0001	0.0005	1.0000	1.0008	0.0000	1.0000	287.700	520.458	551.700
23	0.9993	-0.0106	1.0001	1.0005	0.0000	1.0000	418.500	464.246	559.700
24	0.9993	-0.0092	1.0001	1.0004	0.0000	1.0000	744.500	850.459	1007.600
25	0.9996	-0.0096	1.0001	1.0006	0.0000	1.0000	173.200	178.404	250.300
26	0.9996	-0.0055	1.0001	0.9994	0.0001	1.0000	673.600	772.532	943.500
27	0.9994	-0.0262	1.0003	0.9995	-0.0000	1.0000	58.500	35.585	83.000
28	0.9994	-0.0262	1.0003	0.9995	0.0000	1.0000	145.000	93.588	218.300
29	0.9994	-0.0285	1.0003	1.0006	0.0000	1.0000	102.500	60.742	141.700
30	0.9994	-0.0273	1.0003	1.0006	0.0000	1.0000	152.500	103.960	211.500
31	0.9994	-0.0192	1.0002	0.9977	0.0	1.0000	205.900	202.147	327.900
32	0.9994	-0.0033	1.0000	1.0006	0.0000	1.0000	23.200	40.282	43.000
33	0.9994	-0.0033	1.0000	1.0006	0.0000	1.0000	125.800	197.387	210.700
34	0.9994	-0.0290	1.0003	1.0007	-0.0000	1.0000	91.300	65.600	152.700
35	0.9993	-0.0145	1.0001	1.0006	0.0000	1.0000	22.700	25.663	34.000
36	0.9993	-0.0016	1.0000	1.0006	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.03351 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Thirtieth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9994	-0.0426	1.0004	1.0005	0.0002	1.0000	175.300	59.677	635.600
2	0.9995	-0.0308	1.0003	1.0005	0.0000	1.0000	252.200	104.238	418.400
3	0.9994	-0.0091	1.0001	1.0006	0.0001	1.0000	157.000	411.676	505.300
4	0.9993	-0.0259	1.0003	1.0007	0.0000	1.0000	25.900	20.662	37.800
5	0.9996	-0.0320	1.0003	1.0005	0.0000	1.0000	12.100	1.321	24.200
6	0.9992	-0.0053	1.0001	1.0007	0.0000	1.0000	8.700	15.953	17.400
7	0.9993	-0.0472	1.0005	1.0006	-0.0000	1.0000	16.300	4.675	35.300
8	0.9993	-0.0395	1.0004	1.0006	0.0	1.0000	66.200	35.270	125.700
9	0.9994	-0.0257	1.0003	1.0000	0.0001	1.0000	19.500	34.066	69.500
10	0.9996	-0.0087	1.0001	0.9981	0.0001	1.0000	110.800	290.440	409.600
11	0.9993	-0.0431	1.0004	1.0007	0.0001	1.0000	52.400	27.806	95.000
12	0.9993	-0.0116	1.0001	1.0006	0.0000	1.0000	2.100	3.400	4.300
13	0.9992	-0.0585	1.0006	1.0007	-0.0000	1.0000	103.800	16.145	196.400
14	0.9991	-0.0720	1.0007	1.0008	-0.0000	1.0000	46.400	3.597	95.000
15	0.9992	-0.0617	1.0006	1.0008	0.0000	1.0000	112.100	30.456	248.900
16	0.9991	-0.0280	1.0003	1.0006	0.0000	1.0000	139.200	185.169	304.100
17	0.9992	-0.0259	1.0003	1.0008	0.0000	1.0000	87.700	123.056	204.100
18	0.9991	-0.0205	1.0002	1.0008	0.0000	1.0000	113.800	198.964	275.900
19	0.9993	-0.0213	1.0002	1.0007	0.0000	1.0000	14.500	20.191	32.800
20	0.9993	-0.0499	1.0005	1.0006	0.0000	1.0000	21.700	7.327	37.900
21	1.0020	0.1607	0.9984	0.9982	-0.0000	1.0000	560.800	2.512	999.300
22	1.0001	0.0004	1.0000	1.0007	0.0	1.0000	287.700	520.458	551.700
23	0.9994	-0.0088	1.0001	1.0004	0.0000	1.0000	418.500	464.246	559.700
24	0.9994	-0.0076	1.0001	1.0004	0.0000	1.0000	744.500	850.459	1007.600
25	0.9997	-0.0080	1.0001	1.0005	0.0000	1.0000	173.200	178.404	250.300
26	0.9997	-0.0046	1.0000	0.9995	0.0000	1.0000	673.600	772.532	943.500
27	0.9995	-0.0216	1.0002	0.9999	-0.0000	1.0000	58.500	35.585	83.000
28	0.9995	-0.0218	1.0002	0.9999	0.0000	1.0000	145.000	93.588	218.300
29	0.9995	-0.0236	1.0002	1.0005	0.0000	1.0000	102.500	60.742	141.700
30	0.9995	-0.0226	1.0002	1.0005	0.0000	1.0000	152.500	103.960	211.500
31	0.9995	-0.0159	1.0002	0.9981	0.0000	1.0000	205.500	202.147	327.900
32	0.9995	-0.0027	1.0000	1.0005	0.0001	1.0000	23.200	40.282	43.000
33	0.9995	-0.0027	1.0000	1.0005	0.0000	1.0000	125.800	197.387	210.700
34	0.9995	-0.0240	1.0002	1.0006	0.0000	1.0000	91.300	65.600	152.700
35	0.9994	-0.0120	1.0001	1.0005	0.0000	1.0000	22.700	25.663	34.000
36	0.9994	-0.0013	1.0000	1.0005	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.02773 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Thirty-first Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9995	-0.0355	1.0004	1.0004	0.0002	1.0000	175.300	59.677	635.600
2	0.9996	-0.0257	1.0003	1.0004	0.0000	1.0000	252.200	104.238	418.400
3	0.9995	-0.0076	1.0001	1.0005	0.0	1.0000	157.000	411.676	505.300
4	0.9994	-0.0214	1.0002	1.0005	0.0000	1.0000	25.900	20.662	37.800
5	0.9997	-0.0264	1.0003	1.0004	0.0000	1.0000	12.100	1.321	24.200
6	0.9994	-0.0044	1.0000	1.0006	0.0000	1.0000	8.700	15.953	17.400
7	0.9995	-0.0392	1.0004	1.0005	0.0001	1.0000	16.300	4.675	35.300
8	0.9995	-0.0327	1.0003	1.0005	0.0000	1.0000	66.200	35.270	125.700
9	0.9995	-0.0213	1.0002	1.0000	0.0000	1.0000	19.500	34.066	69.500
10	0.9997	-0.0072	1.0001	0.9984	0.0	1.0000	110.800	290.440	409.600
11	0.9994	-0.0357	1.0004	1.0005	0.0	1.0000	52.400	27.806	95.000
12	0.9994	-0.0096	1.0001	1.0005	0.0000	1.0000	2.100	3.400	4.300
13	0.9994	-0.0487	1.0005	1.0006	0.0000	1.0000	103.800	16.145	196.400
14	0.9993	-0.0596	1.0006	1.0006	0.0000	1.0000	46.400	3.597	95.000
15	0.9993	-0.0511	1.0005	1.0007	0.0000	1.0000	112.100	30.456	248.900
16	0.9993	-0.0231	1.0002	1.0007	0.0001	1.0000	139.200	185.169	304.100
17	0.9993	-0.0214	1.0002	1.0006	0.0001	1.0000	87.700	123.056	204.100
18	0.9993	-0.0173	1.0002	1.0007	0.0000	1.0000	113.800	198.964	275.900
19	0.9994	-0.0176	1.0002	1.0006	0.0	1.0000	16.500	20.191	32.800
20	0.9994	-0.0412	1.0004	1.0005	0.0001	1.0000	21.700	7.327	37.900
21	1.0016	0.1328	0.9987	0.9985	0.0000	1.0000	560.800	2.512	999.300
22	1.0001	0.0003	1.0000	1.0005	0.0	1.0000	287.700	520.458	551.700
23	0.9995	-0.0072	1.0001	1.0003	0.0000	1.0000	418.500	464.246	559.700
24	0.9995	-0.0063	1.0001	1.0003	0.0	1.0000	744.500	850.459	1007.600
25	0.9997	-0.0066	1.0001	1.0004	0.0	1.0000	173.200	178.404	250.300
26	0.9997	-0.0038	1.0000	0.9996	0.0000	1.0000	673.600	772.532	943.500
27	0.9996	-0.0180	1.0002	0.9995	0.0000	1.0000	58.500	35.585	83.000
28	0.9996	-0.0180	1.0002	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	0.9996	-0.0196	1.0002	1.0004	0.0	1.0000	102.500	60.742	141.700
30	0.9996	-0.0187	1.0002	1.0004	0.0000	1.0000	152.500	103.960	211.500
31	0.9996	-0.0132	1.0001	0.9984	0.0	1.0000	205.500	202.147	327.900
32	0.9996	-0.0023	1.0000	1.0004	0.0001	1.0000	23.200	40.282	43.000
33	0.9996	-0.0023	1.0000	1.0004	0.0000	1.0000	125.800	197.387	210.700
34	0.9996	-0.0199	1.0002	1.0005	-0.0000	1.0000	91.300	65.600	152.700
35	0.9995	-0.0100	1.0001	1.0004	0.0000	1.0000	22.700	25.663	34.000
36	0.9995	-0.0011	1.0000	1.0004	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.02296 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Thirty-second Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9996	-0.0295	1.0003	1.0004	0.0002	1.0000	175.300	59.677	635.600
2	0.9997	-0.0214	1.0002	1.0004	0.0000	1.0000	252.200	104.238	418.400
3	0.9996	-0.0063	1.0001	1.0004	-0.0000	1.0000	157.000	411.676	505.300
4	0.9995	-0.0178	1.0002	1.0004	0.0000	1.0000	25.900	20.662	37.800
5	0.9997	-0.0221	1.0002	1.0004	0.0000	1.0000	12.100	1.321	24.200
6	0.9995	-0.0037	1.0000	1.0005	0.0000	1.0000	8.700	15.953	17.400
7	0.9995	-0.0325	1.0003	1.0004	0.0	1.0000	16.300	4.675	35.300
8	0.9995	-0.0271	1.0003	1.0004	0.0000	1.0000	66.200	35.270	125.700
9	0.9996	-0.0177	1.0002	1.0000	0.0000	1.0000	19.500	34.066	69.500
10	0.9998	-0.0060	1.0001	0.9987	0.0002	1.0000	110.800	290.440	409.600
11	0.9995	-0.0295	1.0003	1.0004	-0.0000	1.0000	52.400	27.806	95.000
12	0.9995	-0.0080	1.0001	1.0004	0.0000	1.0000	2.100	3.400	4.300
13	0.9995	-0.0404	1.0004	1.0005	0.0000	1.0000	103.800	16.145	196.400
14	0.9994	-0.0493	1.0005	1.0005	0.0	1.0000	46.400	3.597	95.000
15	0.9994	-0.0423	1.0004	1.0005	0.0000	1.0000	112.100	30.456	248.900
16	0.9994	-0.0192	1.0002	1.0005	0.0000	1.0000	139.200	185.169	304.100
17	0.9995	-0.0177	1.0002	1.0005	0.0001	1.0000	87.700	123.056	204.100
18	0.9994	-0.0143	1.0001	1.0006	0.0001	1.0000	113.800	198.964	275.900
19	0.9995	-0.0146	1.0001	1.0005	0.0000	1.0000	16.500	20.191	32.800
20	0.9995	-0.0341	1.0003	1.0004	0.0000	1.0000	21.700	7.327	37.900
21	1.0013	0.1097	0.9985	0.9988	0.0000	1.0000	560.800	2.512	999.300
22	1.0001	0.0003	1.0000	1.0004	0.0	1.0000	287.700	520.458	551.700
23	0.9996	-0.0060	1.0001	1.0003	0.0000	1.0000	418.500	464.246	559.700
24	0.9996	-0.0052	1.0001	1.0002	0.0000	1.0000	744.500	850.459	1007.600
25	0.9998	-0.0055	1.0001	1.0003	0.0000	1.0000	173.200	178.404	250.300
26	0.9998	-0.0031	1.0000	0.9996	0.0	1.0000	673.600	772.532	943.500
27	0.9997	-0.0149	1.0001	1.0000	0.0000	1.0000	58.500	35.585	83.000
28	0.9997	-0.0149	1.0001	1.0000	0.0	1.0000	145.000	93.588	218.300
29	0.9997	-0.0162	1.0002	1.0003	0.0000	1.0000	102.500	60.742	141.700
30	0.9996	-0.0155	1.0002	1.0003	0.0000	1.0000	152.500	103.960	211.500
31	0.9997	-0.0109	1.0001	0.9987	0.0000	1.0000	205.900	202.147	327.900
32	0.9996	-0.0019	1.0000	1.0004	0.0001	1.0000	23.200	40.282	43.000
33	0.9996	-0.0019	1.0000	1.0004	0.0	1.0000	125.800	197.387	210.700
34	0.9997	-0.0165	1.0002	1.0004	0.0000	1.0000	91.300	65.600	152.700
35	0.9996	-0.0082	1.0001	1.0004	0.0000	1.0000	22.700	25.663	34.000
36	0.9996	-0.0009	1.0000	1.0003	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.01502 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Thirty-third Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9997	-0.0245	1.0002	1.0003	0.0001	1.0000	175.300	59.677	635.600
2	0.9997	-0.0178	1.0002	1.0003	0.0000	1.0000	252.200	104.238	418.400
3	0.9997	-0.0052	1.0001	1.0003	0.0001	1.0000	157.000	411.676	505.300
4	0.9996	-0.0147	1.0001	1.0004	0.0000	1.0000	25.900	20.662	37.800
5	0.9998	-0.0182	1.0002	1.0003	0.0000	1.0000	12.100	1.321	24.200
6	0.9996	-0.0030	1.0000	1.0004	0.0000	1.0000	8.700	15.953	17.400
7	0.9996	-0.0268	1.0003	1.0003	0.0	1.0000	16.300	4.675	35.300
8	0.9996	-0.0224	1.0002	1.0003	-0.0000	1.0000	66.200	35.270	125.700
9	0.9997	-0.0146	1.0001	1.0000	0.0	1.0000	19.500	34.066	69.500
10	0.9998	-0.0050	1.0000	0.9989	-0.0001	1.0000	110.800	290.440	409.600
11	0.9996	-0.0245	1.0002	1.0004	0.0000	1.0000	52.400	27.806	95.000
12	0.9996	-0.0066	1.0001	1.0004	0.0001	1.0000	2.100	3.400	4.300
13	0.9996	-0.0333	1.0003	1.0004	0.0001	1.0000	103.800	16.145	196.400
14	0.9995	-0.0408	1.0004	1.0004	0.0000	1.0000	46.400	3.597	95.000
15	0.9995	-0.0350	1.0003	1.0005	0.0001	1.0000	112.100	30.456	248.900
16	0.9995	-0.0158	1.0002	1.0004	0.0001	1.0000	139.200	185.169	304.100
17	0.9996	-0.0147	1.0001	1.0004	0.0001	1.0000	87.700	123.056	204.100
18	0.9995	-0.0118	1.0001	1.0005	0.0001	1.0000	113.800	198.964	275.900
19	0.9996	-0.0121	1.0001	1.0004	0.0001	1.0000	16.500	20.191	32.800
20	0.9996	-0.0283	1.0003	1.0004	-0.0000	1.0000	21.700	7.327	37.900
21	1.0011	0.0906	0.9991	0.9990	-0.0000	1.0000	560.800	2.512	999.300
22	1.0000	0.0002	1.0000	1.0004	0.0000	1.0000	287.700	520.456	551.700
23	0.9996	-0.0050	1.0000	1.0002	0.0000	1.0000	418.500	464.246	559.700
24	0.9997	-0.0043	1.0000	1.0002	0.0000	1.0000	744.500	850.459	1007.600
25	0.9998	-0.0046	1.0000	1.0003	0.0000	1.0000	173.200	178.404	250.300
26	0.9998	-0.0026	1.0000	0.9997	0.0	1.0000	673.600	772.532	943.500
27	0.9997	-0.0123	1.0001	1.0000	0.0	1.0000	58.500	35.585	83.000
28	0.9997	-0.0124	1.0001	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	0.9997	-0.0134	1.0001	1.0003	0.0000	1.0000	102.500	60.742	141.700
30	0.9997	-0.0128	1.0001	1.0003	0.0000	1.0000	152.500	103.960	211.500
31	0.9997	-0.0090	1.0001	0.9989	0.0000	1.0000	205.900	202.147	327.900
32	0.9997	-0.0016	1.0000	1.0003	0.0001	1.0000	23.200	40.282	43.000
33	0.9997	-0.0015	1.0000	1.0003	0.0000	1.0000	125.800	197.387	210.700
34	0.9997	-0.0137	1.0001	1.0003	0.0001	1.0000	91.300	65.600	152.700
35	0.9997	-0.0068	1.0001	1.0003	0.0000	1.0000	22.700	25.663	34.000
36	0.9997	-0.0008	1.0000	1.0003	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.01574 AVERAGE S-RESID= 0.00004

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

Thirty-fourth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9997	-0.0204	1.0002	1.0003	-0.0000	1.0000	175.300	59.677	635.600
2	0.9998	-0.0148	1.0001	1.0003	0.0000	1.0000	252.200	104.238	418.400
3	0.9997	-0.0044	1.0000	1.0003	-0.0000	1.0000	157.000	411.676	505.300
4	0.9997	-0.0122	1.0001	1.0003	0.0000	1.0000	25.900	20.662	37.800
5	0.9998	-0.0153	1.0002	1.0002	0.0000	1.0000	12.100	1.321	24.200
6	0.9996	-0.0025	1.0000	1.0003	0.0000	1.0000	8.700	15.953	17.400
7	0.9997	-0.0223	1.0002	1.0003	0.0001	1.0000	16.300	4.675	35.300
8	0.9997	-0.0185	1.0002	1.0003	0.0001	1.0000	66.200	35.270	125.700
9	0.9997	-0.0122	1.0001	1.0000	0.0001	1.0000	19.500	34.066	69.500
10	0.9998	-0.0041	1.0000	0.9991	0.0	1.0000	110.800	290.440	409.600
11	0.9997	-0.0203	1.0002	1.0003	0.0001	1.0000	52.400	27.806	95.000
12	0.9997	-0.0055	1.0001	1.0003	-0.0000	1.0000	2.100	3.400	4.300
13	0.9996	-0.0277	1.0003	1.0003	0.0001	1.0000	103.800	16.145	196.400
14	0.9996	-0.0339	1.0003	1.0004	0.0	1.0000	46.400	3.597	95.000
15	0.9996	-0.0290	1.0003	1.0004	0.0000	1.0000	112.100	30.456	248.900
16	0.9996	-0.0132	1.0001	1.0004	0.0000	1.0000	139.200	185.169	304.100
17	0.9996	-0.0122	1.0001	1.0004	0.0000	1.0000	87.700	123.056	204.100
18	0.9996	-0.0096	1.0001	1.0004	0.0000	1.0000	113.800	198.964	275.900
19	0.9997	-0.0100	1.0001	1.0003	0.0000	1.0000	16.500	20.191	32.800
20	0.9996	-0.0236	1.0002	1.0003	0.0	1.0000	21.700	7.327	37.900
21	1.0009	0.0750	0.9993	0.9992	0.0	1.0000	560.800	2.512	999.300
22	1.0000	0.0002	1.0000	1.0003	0.0	1.0000	287.700	520.458	551.700
23	0.9997	-0.0041	1.0000	1.0002	0.0000	1.0000	418.500	464.246	559.700
24	0.9997	-0.0036	1.0000	1.0002	0.0	1.0000	744.500	850.459	1007.600
25	0.9998	-0.0038	1.0000	1.0002	0.0000	1.0000	173.200	178.404	250.300
26	0.9999	-0.0022	1.0000	0.9998	0.0	1.0000	673.600	772.532	943.500
27	0.9998	-0.0103	1.0001	1.0000	0.0	1.0000	58.500	35.585	83.000
28	0.9998	-0.0103	1.0001	1.0000	-0.0000	1.0000	145.000	93.588	218.300
29	0.9998	-0.0112	1.0001	1.0002	0.0000	1.0000	102.500	60.742	141.700
30	0.9997	-0.0107	1.0001	1.0002	0.0000	1.0000	152.500	103.960	211.500
31	0.9998	-0.0075	1.0001	0.9991	0.0	1.0000	205.900	202.147	327.900
32	0.9998	-0.0013	1.0000	1.0002	0.0000	1.0000	23.200	40.282	43.000
33	0.9998	-0.0013	1.0000	1.0003	0.0	1.0000	125.800	197.387	210.700
34	0.9998	-0.0113	1.0001	1.0003	0.0000	1.0000	91.300	65.600	152.700
35	0.9997	-0.0057	1.0001	1.0003	0.0000	1.0000	22.700	25.663	34.000
36	0.9997	-0.0006	1.0000	1.0002	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.01308 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

Thirty-fifth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9998	-0.0169	1.0002	1.0002	0.0	1.0000	175.300	59.677	635.600
2	0.9998	-0.0123	1.0001	1.0002	0.0000	1.0000	252.200	104.238	418.400
3	0.9998	-0.0036	1.0000	1.0002	0.0001	1.0000	157.000	411.676	505.300
4	0.9997	-0.0102	1.0001	1.0003	0.0000	1.0000	25.900	20.662	37.800
5	0.9998	-0.0125	1.0001	1.0002	0.0000	1.0000	12.100	1.321	24.200
6	0.9997	-0.0021	1.0000	1.0003	0.0000	1.0000	8.700	15.953	17.400
7	0.9997	-0.0186	1.0002	1.0002	0.0	1.0000	16.300	4.675	35.300
8	0.9997	-0.0155	1.0002	1.0002	0.0000	1.0000	66.200	35.270	125.700
9	0.9998	-0.0101	1.0001	1.0000	0.0000	1.0000	19.500	34.066	69.500
10	0.9999	-0.0034	1.0000	0.9993	0.0001	1.0000	110.600	290.440	409.600
11	0.9997	-0.0168	1.0002	1.0003	0.0001	1.0000	52.400	27.806	95.000
12	0.9997	-0.0045	1.0000	1.0002	0.0001	1.0000	2.100	3.400	4.300
13	0.9997	-0.0230	1.0002	1.0003	0.0	1.0000	103.600	16.145	196.400
14	0.9996	-0.0281	1.0003	1.0003	0.0001	1.0000	46.400	3.597	95.000
15	0.9997	-0.0240	1.0002	1.0003	0.0000	1.0000	112.100	30.456	248.900
16	0.9997	-0.0109	1.0001	1.0003	0.0000	1.0000	139.200	185.169	304.100
17	0.9997	-0.0101	1.0001	1.0003	0.0000	1.0000	87.700	123.056	204.100
18	0.9996	-0.0081	1.0001	1.0003	-0.0000	1.0000	113.800	198.964	275.900
19	0.9997	-0.0083	1.0001	1.0003	0.0000	1.0000	16.500	20.191	32.800
20	0.9997	-0.0194	1.0002	1.0003	0.0	1.0000	21.700	7.327	37.900
21	1.0008	0.0620	0.9994	0.9993	0.0001	1.0000	560.800	2.512	999.300
22	1.0000	0.0002	1.0000	1.0003	0.0001	1.0000	287.700	520.458	551.700
23	0.9998	-0.0034	1.0000	1.0001	0.0000	1.0000	418.500	464.246	559.700
24	0.9998	-0.0030	1.0000	1.0001	-0.0000	1.0000	744.500	850.459	1007.600
25	0.9999	-0.0032	1.0000	1.0002	0.0000	1.0000	173.200	178.404	250.300
26	0.9999	-0.0018	1.0000	0.9998	0.0000	1.0000	673.600	772.532	943.500
27	0.9998	-0.0085	1.0001	1.0000	0.0000	1.0000	58.500	35.585	83.000
28	0.9998	-0.0085	1.0001	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	0.9998	-0.0092	1.0001	1.0002	0.0000	1.0000	102.500	60.742	141.700
30	0.9998	-0.0088	1.0001	1.0002	0.0000	1.0000	152.500	103.960	211.500
31	0.9998	-0.0062	1.0001	0.9993	0.0000	1.0000	205.900	202.147	327.900
32	0.9998	-0.0011	1.0000	1.0002	0.0000	1.0000	23.200	40.282	43.000
33	0.9998	-0.0011	1.0000	1.0002	0.0000	1.0000	125.800	197.387	210.700
34	0.9998	-0.0094	1.0001	1.0002	0.0000	1.0000	91.300	65.600	152.700
35	0.9998	-0.0047	1.0000	1.0002	0.0000	1.0000	22.700	25.663	34.000
36	0.9998	-0.0005	1.0000	1.0002	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.01084 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Thirty-sixth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9998	-0.0141	1.0001	1.0002	0.0001	1.0000	175.300	59.677	635.600
2	0.9998	-0.0103	1.0001	1.0002	0.0000	1.0000	252.200	104.238	418.400
3	0.9998	-0.0030	1.0000	1.0002	-0.0001	1.0000	157.000	411.676	505.300
4	0.9998	-0.0084	1.0001	1.0002	0.0000	1.0000	25.900	20.662	37.800
5	0.9999	-0.0106	1.0001	1.0002	0.0000	1.0000	12.100	1.321	24.200
6	0.9998	-0.0017	1.0000	1.0002	0.0001	1.0000	8.700	15.953	17.400
7	0.9998	-0.0152	1.0002	1.0002	-0.0000	1.0000	16.300	4.675	35.300
8	0.9998	-0.0128	1.0001	1.0002	0.0000	1.0000	66.200	35.270	125.700
9	0.9998	-0.0084	1.0001	1.0000	-0.0000	1.0000	19.500	34.066	69.500
10	0.9999	-0.0028	1.0000	0.9994	0.0	1.0000	110.600	290.440	409.600
11	0.9998	-0.0139	1.0001	1.0002	0.0000	1.0000	52.400	27.806	95.000
12	0.9998	-0.0038	1.0000	1.0002	-0.0000	1.0000	2.100	3.400	4.300
13	0.9997	-0.0191	1.0002	1.0002	0.0	1.0000	103.800	16.145	196.400
14	0.9997	-0.0232	1.0002	1.0002	0.0000	1.0000	46.400	3.597	95.000
15	0.9997	-0.0200	1.0002	1.0003	0.0000	1.0000	112.100	30.456	248.900
16	0.9997	-0.0091	1.0001	1.0003	0.0000	1.0000	139.200	185.169	304.100
17	0.9997	-0.0084	1.0001	1.0002	0.0000	1.0000	87.700	123.056	204.100
18	0.9997	-0.0067	1.0001	1.0003	0.0000	1.0000	113.800	198.964	275.900
19	0.9998	-0.0069	1.0001	1.0002	0.0000	1.0000	16.500	20.191	32.800
20	0.9998	-0.0161	1.0002	1.0002	0.0	1.0000	21.700	7.327	37.900
21	1.0006	0.0511	0.9995	0.9994	0.0	1.0000	560.800	2.512	999.300
22	1.0000	0.0001	1.0000	1.0002	0.0000	1.0000	287.700	520.458	551.700
23	0.9998	-0.0029	1.0000	1.0001	0.0000	1.0000	418.500	464.246	559.700
24	0.9998	-0.0025	1.0000	1.0001	0.0000	1.0000	744.500	850.459	1007.600
25	0.9999	-0.0026	1.0000	1.0002	0.0000	1.0000	173.200	178.404	250.300
26	0.9999	-0.0015	1.0000	0.9998	0.0000	1.0000	673.600	772.532	943.500
27	0.9999	-0.0071	1.0001	1.0000	0.0000	1.0000	58.500	35.585	83.000
28	0.9999	-0.0071	1.0001	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	0.9998	-0.0077	1.0001	1.0002	0.0000	1.0000	102.500	60.742	141.700
30	0.9998	-0.0074	1.0001	1.0002	0.0000	1.0000	152.500	103.960	211.500
31	0.9998	-0.0052	1.0001	0.9994	0.0	1.0000	205.900	202.147	327.900
32	0.9998	-0.0009	1.0000	1.0002	0.0001	1.0000	23.200	40.282	43.000
33	0.9998	-0.0009	1.0000	1.0002	-0.0000	1.0000	125.800	197.387	210.700
34	0.9998	-0.0078	1.0001	1.0002	0.0000	1.0000	91.300	65.600	152.700
35	0.9998	-0.0039	1.0000	1.0002	0.0000	1.0000	22.700	25.663	34.000
36	0.9998	-0.0004	1.0000	1.0002	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.00899 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

Thirty-seventh Iteration

NO	R-VALUE	R-RESID	RCCFSUM	S-VALUE	S-RESID	SCCFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9998	-0.0117	1.0001	1.0001	0.0001	1.0000	175.300	59.677	635.600
2	0.9999	-0.0086	1.0001	1.0001	0.0000	1.0000	252.200	104.238	418.400
3	0.9998	-0.0025	1.0000	1.0002	0.0000	1.0000	157.000	411.676	505.300
4	0.9998	-0.0070	1.0001	1.0002	0.0000	1.0000	25.900	20.662	37.800
5	0.9999	-0.0088	1.0001	1.0001	0.0000	1.0000	12.100	1.321	24.200
6	0.9998	-0.0014	1.0000	1.0002	0.0000	1.0000	8.700	15.953	17.400
7	0.9998	-0.0129	1.0001	1.0002	-0.0000	1.0000	16.300	4.675	35.300
8	0.9998	-0.0106	1.0001	1.0002	0.0000	1.0000	66.200	35.270	125.700
9	0.9998	-0.0069	1.0001	1.0000	-0.0000	1.0000	19.500	34.066	69.500
10	0.9999	-0.0024	1.0000	0.9995	0.0001	1.0000	110.800	290.440	409.600
11	0.9998	-0.0116	1.0001	1.0002	0.0000	1.0000	52.400	27.806	95.000
12	0.9998	-0.0031	1.0000	1.0002	0.0001	1.0000	2.100	3.400	4.300
13	0.9998	-0.0159	1.0002	1.0002	0.0000	1.0000	103.800	16.145	196.400
14	0.9998	-0.0193	1.0002	1.0002	0.0	1.0000	46.400	3.597	95.000
15	0.9998	-0.0166	1.0002	1.0002	0.0000	1.0000	112.100	30.456	248.900
16	0.9998	-0.0075	1.0001	1.0002	0.0000	1.0000	139.200	185.169	304.100
17	0.9998	-0.0070	1.0001	1.0002	0.0001	1.0000	87.700	123.056	204.100
18	0.9998	-0.0056	1.0001	1.0002	0.0001	1.0000	113.800	198.964	275.900
19	0.9998	-0.0057	1.0001	1.0002	0.0	1.0000	16.500	20.191	32.800
20	0.9998	-0.0134	1.0001	1.0002	0.0	1.0000	21.700	7.327	37.900
21	1.0005	0.0422	0.9996	0.9995	0.0000	1.0000	560.800	2.512	999.300
22	1.0000	0.0001	1.0000	1.0002	-0.0000	1.0000	287.700	520.458	551.700
23	0.9998	-0.0024	1.0000	1.0001	0.0000	1.0000	418.500	464.246	559.700
24	0.9998	-0.0021	1.0000	1.0001	0.0	1.0000	744.500	850.459	1007.600
25	0.9999	-0.0022	1.0000	1.0001	0.0	1.0000	173.200	178.404	250.300
26	0.9999	-0.0013	1.0000	0.9999	0.0	1.0000	673.600	772.532	943.500
27	0.9999	-0.0059	1.0001	1.0000	-0.0000	1.0000	58.500	35.585	83.000
28	0.9999	-0.0059	1.0001	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	0.9999	-0.0064	1.0001	1.0001	0.0000	1.0000	102.500	60.742	141.700
30	0.9999	-0.0061	1.0001	1.0001	0.0000	1.0000	152.500	103.960	211.500
31	0.9999	-0.0043	1.0000	0.9995	0.0000	1.0000	205.900	202.147	327.900
32	0.9999	-0.0007	1.0000	1.0001	0.0001	1.0000	23.200	40.282	43.000
33	0.9999	-0.0007	1.0000	1.0001	0.0000	1.0000	125.800	197.387	210.700
34	0.9999	-0.0065	1.0001	1.0002	0.0000	1.0000	91.300	65.600	152.700
35	0.9998	-0.0033	1.0000	1.0001	0.0000	1.0000	22.700	25.663	34.000
36	0.9998	-0.0004	1.0000	1.0001	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.00747 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

Thirty-eighth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9999	-0.0099	1.0001	1.0001	-0.0001	1.0000	175.300	59.677	635.600
2	0.9999	-0.0072	1.0001	1.0001	0.0000	1.0000	252.200	104.238	418.400
3	0.9999	-0.0021	1.0000	1.0001	0.0001	1.0000	157.000	411.676	505.300
4	0.9998	-0.0058	1.0001	1.0001	0.0000	1.0000	25.900	20.662	37.800
5	0.9999	-0.0074	1.0001	1.0001	0.0001	1.0000	12.100	1.321	24.200
6	0.9998	-0.0012	1.0000	1.0002	0.0000	1.0000	8.700	15.953	17.400
7	0.9999	-0.0106	1.0001	1.0001	0.0001	1.0000	16.300	4.675	35.300
8	0.9999	-0.0089	1.0001	1.0001	-0.0000	1.0000	66.200	35.270	125.700
9	0.9999	-0.0058	1.0001	1.0000	-0.0000	1.0000	19.500	34.066	69.500
10	0.9999	-0.0020	1.0000	0.9996	0.0	1.0000	110.800	250.440	409.600
11	0.9998	-0.0097	1.0001	1.0001	0.0	1.0000	52.400	27.806	95.000
12	0.9999	-0.0026	1.0000	1.0001	0.0000	1.0000	2.100	3.400	4.300
13	0.9998	-0.0131	1.0001	1.0002	0.0000	1.0000	103.800	16.145	196.400
14	0.9998	-0.0161	1.0002	1.0002	-0.0000	1.0000	46.400	3.597	95.000
15	0.9998	-0.0137	1.0001	1.0002	0.0001	1.0000	112.100	30.456	248.900
16	0.9998	-0.0062	1.0001	1.0002	0.0000	1.0000	139.200	185.169	304.100
17	0.9998	-0.0058	1.0001	1.0002	0.0000	1.0000	87.700	123.056	204.100
18	0.9998	-0.0046	1.0000	1.0002	0.0000	1.0000	113.800	198.964	275.900
19	0.9999	-0.0048	1.0000	1.0002	-0.0000	1.0000	16.500	20.191	32.800
20	0.9998	-0.0112	1.0001	1.0001	0.0	1.0000	21.700	7.327	37.900
21	1.0004	0.0348	0.9997	0.9996	0.0000	1.0000	560.800	2.512	999.300
22	1.0000	0.0001	1.0000	1.0001	0.0000	1.0000	287.700	520.458	551.700
23	0.9999	-0.0020	1.0000	1.0001	0.0000	1.0000	418.500	464.246	559.700
24	0.9999	-0.0017	1.0000	1.0001	0.0000	1.0000	744.500	850.459	1007.600
25	0.9999	-0.0018	1.0000	1.0001	0.0000	1.0000	173.200	178.404	250.300
26	0.9999	-0.0011	1.0000	0.9999	0.0001	1.0000	673.600	772.532	943.500
27	0.9999	-0.0049	1.0000	1.0000	-0.0000	1.0000	58.500	35.585	83.000
28	0.9999	-0.0050	1.0000	1.0000	0.0	1.0000	145.000	93.588	218.300
29	0.9999	-0.0053	1.0001	1.0001	0.0	1.0000	102.500	60.742	141.700
30	0.9999	-0.0051	1.0001	1.0001	0.0000	1.0000	152.500	103.960	211.500
31	0.9999	-0.0036	1.0000	0.9996	0.0	1.0000	205.900	202.147	327.900
32	0.9999	-0.0006	1.0000	1.0001	0.0001	1.0000	23.200	40.282	43.000
33	0.9999	-0.0006	1.0000	1.0001	0.0000	1.0000	125.800	197.387	210.700
34	0.9999	-0.0054	1.0001	1.0001	0.0000	1.0000	91.300	65.600	152.700
35	0.9999	-0.0027	1.0000	1.0001	0.0000	1.0000	22.700	25.663	34.000
36	0.9999	-0.0003	1.0000	1.0001	0.0000	1.0000	404.100	521.859	527.300

AVERAGE R-RESID= 0.00621 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Thirty-ninth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TCTL-OUTPT
1	0.9999	-0.0082	1.0001	1.0001	0.0	1.0000	175.300	59.677	635.600
2	0.9999	-0.0066	1.0001	1.0001	0.0000	1.0000	252.200	104.238	418.400
3	0.9999	-0.0017	1.0000	1.0001	0.0001	1.0000	157.000	411.676	505.300
4	0.9999	-0.0048	1.0000	1.0001	0.0000	1.0000	25.900	20.662	37.800
5	0.9999	-0.0062	1.0001	1.0001	0.0001	1.0000	12.100	1.321	24.200
6	0.9999	-0.0010	1.0000	1.0001	0.0000	1.0000	8.700	15.953	17.400
7	0.9999	-0.0087	1.0001	1.0001	0.0	1.0000	16.300	4.675	35.300
8	0.9999	-0.0074	1.0001	1.0001	0.0	1.0000	66.200	35.270	125.700
9	0.9999	-0.0048	1.0000	1.0000	0.0000	1.0000	19.500	34.066	69.500
10	0.9999	-0.0017	1.0000	0.9997	0.0001	1.0000	110.800	290.440	409.600
11	0.9999	-0.0080	1.0001	1.0001	0.0000	1.0000	52.400	27.806	95.000
12	0.9999	-0.0022	1.0000	1.0001	0.0	1.0000	2.100	3.400	4.300
13	0.9999	-0.0109	1.0001	1.0001	0.0000	1.0000	103.800	16.145	196.400
14	0.9998	-0.0133	1.0001	1.0001	0.0000	1.0000	46.400	3.597	95.000
15	0.9998	-0.0114	1.0001	1.0001	0.0000	1.0000	112.100	30.456	248.900
16	0.9998	-0.0052	1.0001	1.0001	0.0000	1.0000	139.200	185.169	304.100
17	0.9999	-0.0048	1.0000	1.0001	0.0001	1.0000	87.700	123.056	204.100
18	0.9998	-0.0039	1.0000	1.0002	0.0000	1.0000	113.800	198.964	275.900
19	0.9999	-0.0040	1.0000	1.0001	0.0	1.0000	16.500	20.191	32.800
20	0.9999	-0.0092	1.0001	1.0001	0.0000	1.0000	21.700	7.327	37.900
21	1.0003	0.0287	0.9997	0.9997	-0.0000	1.0000	560.800	2.512	999.300
22	1.0000	0.0001	1.0000	1.0001	0.0000	1.0000	287.700	520.458	551.700
23	0.9999	-0.0016	1.0000	1.0001	0.0000	1.0000	418.500	464.246	559.700
24	0.9999	-0.0014	1.0000	1.0001	0.0000	1.0000	744.500	850.459	1007.600
25	0.9999	-0.0015	1.0000	1.0001	0.0	1.0000	173.200	178.404	250.300
26	0.9999	-0.0009	1.0000	0.9999	0.0	1.0000	673.600	772.532	943.500
27	0.9999	-0.0041	1.0000	1.0000	0.0	1.0000	58.500	35.585	82.000
28	0.9999	-0.0041	1.0000	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	0.9999	-0.0045	1.0000	1.0001	0.0000	1.0000	102.500	60.742	141.700
30	0.9999	-0.0043	1.0000	1.0001	0.0000	1.0000	152.500	103.960	211.500
31	0.9999	-0.0030	1.0000	0.9997	-0.0000	1.0000	205.900	202.147	327.900
32	0.9999	-0.0005	1.0000	1.0001	0.0	1.0000	23.200	40.282	43.000
33	0.9999	-0.0005	1.0000	1.0001	0.0	1.0000	125.800	197.387	210.700
34	0.9999	-0.0046	1.0000	1.0001	0.0001	1.0000	91.300	65.600	152.700
35	0.9999	-0.0023	1.0000	1.0001	-0.0000	1.0000	22.700	25.663	34.000
36	0.9999	-0.0003	1.0000	1.0001	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.00516 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

Fortieth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9999	-0.0069	1.0001	1.0001	0.0000	1.0000	175.300	59.677	635.600
2	0.9999	-0.0051	1.0001	1.0001	0.0000	1.0000	252.200	104.238	418.400
3	0.9999	-0.0015	1.0000	1.0001	0.0000	1.0000	157.000	411.676	505.300
4	0.9999	-0.0040	1.0000	1.0001	0.0000	1.0000	25.900	20.662	37.800
5	0.9999	-0.0052	1.0001	1.0001	0.0000	1.0000	12.100	1.321	24.200
6	0.9999	-0.0008	1.0000	1.0001	0.0000	1.0000	8.700	15.953	17.400
7	0.9999	-0.0074	1.0001	1.0001	0.0	1.0000	16.300	4.675	35.300
8	0.9999	-0.0062	1.0001	1.0001	0.0000	1.0000	66.200	35.270	125.700
9	0.9999	-0.0041	1.0000	1.0000	0.0000	1.0000	19.500	34.066	69.500
10	0.9999	-0.0014	1.0000	0.9997	0.0001	1.0000	110.600	290.440	409.600
11	0.9999	-0.0067	1.0001	1.0001	-0.0000	1.0000	52.400	27.806	95.000
12	0.9999	-0.0018	1.0000	1.0001	0.0000	1.0000	2.100	3.400	4.300
13	0.9999	-0.0091	1.0001	1.0001	0.0000	1.0000	103.800	16.145	196.400
14	0.9999	-0.0111	1.0001	1.0001	-0.0000	1.0000	46.400	3.597	95.000
15	0.9999	-0.0095	1.0001	1.0001	0.0001	1.0000	112.100	30.456	248.900
16	0.9999	-0.0043	1.0000	1.0001	0.0000	1.0000	139.200	185.169	304.100
17	0.9999	-0.0040	1.0000	1.0001	0.0000	1.0000	87.700	123.056	204.100
18	0.9999	-0.0032	1.0000	1.0001	0.0001	1.0000	113.600	198.964	275.900
19	0.9999	-0.0033	1.0000	1.0001	0.0	1.0000	16.500	20.191	32.800
20	0.9999	-0.0078	1.0001	1.0001	0.0001	1.0000	21.700	7.327	37.900
21	1.0003	0.0236	0.9998	0.9997	0.0000	1.0000	560.600	2.512	999.300
22	1.0000	0.0000	1.0000	1.0001	0.0000	1.0000	287.700	520.458	551.700
23	0.9999	-0.0014	1.0000	1.0001	0.0000	1.0000	418.500	464.246	559.700
24	0.9999	-0.0012	1.0000	1.0001	0.0	1.0000	744.500	850.459	1007.600
25	0.9999	-0.0013	1.0000	1.0001	0.0000	1.0000	173.200	178.404	250.300
26	1.0000	-0.0008	1.0000	0.9999	-0.0001	1.0000	673.600	772.532	943.500
27	0.9999	-0.0035	1.0000	1.0000	0.0000	1.0000	58.500	35.585	83.000
28	0.9999	-0.0035	1.0000	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	0.9999	-0.0038	1.0000	1.0001	0.0000	1.0000	102.500	60.742	141.700
30	0.9999	-0.0036	1.0000	1.0001	0.0000	1.0000	152.500	103.960	211.500
31	0.9999	-0.0025	1.0000	0.9997	0.0000	1.0000	205.900	202.147	327.900
32	0.9999	-0.0004	1.0000	1.0001	0.0	1.0000	23.200	40.282	43.000
33	0.9999	-0.0004	1.0000	1.0001	0.0001	1.0000	125.800	197.387	210.700
34	0.9999	-0.0038	1.0000	1.0001	0.0001	1.0000	91.300	65.600	152.700
35	0.9999	-0.0019	1.0000	1.0001	0.0000	1.0000	22.700	25.663	34.000
36	0.9999	-0.0002	1.0000	1.0001	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.00432 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Forty-first Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9999	-0.0058	1.0001	1.0001	-0.0000	1.0000	175.300	59.677	635.600
2	0.9999	-0.0042	1.0000	1.0001	0.0000	1.0000	252.200	104.238	418.400
3	0.9999	-0.0012	1.0000	1.0001	-0.0001	1.0000	157.000	411.676	505.300
4	0.9999	-0.0034	1.0000	1.0001	0.0	1.0000	25.900	20.662	37.800
5	0.9999	-0.0044	1.0000	1.0001	0.0000	1.0000	12.100	1.321	24.200
6	0.9999	-0.0007	1.0000	1.0001	0.0001	1.0000	8.700	15.953	17.400
7	0.9999	-0.0063	1.0001	1.0001	0.0001	1.0000	16.300	4.675	35.300
8	0.9999	-0.0051	1.0001	1.0001	0.0000	1.0000	66.200	35.270	125.700
9	0.9999	-0.0034	1.0000	1.0000	0.0001	1.0000	19.500	34.066	69.500
10	1.0000	-0.0012	1.0000	0.9998	0.0001	1.0000	110.600	290.440	409.600
11	0.9999	-0.0056	1.0001	1.0001	0.0	1.0000	52.400	27.806	95.000
12	0.9999	-0.0015	1.0000	1.0001	0.0001	1.0000	2.100	3.400	4.300
13	0.9999	-0.0077	1.0001	1.0001	0.0000	1.0000	103.800	16.145	196.400
14	0.9999	-0.0092	1.0001	1.0001	0.0	1.0000	46.400	3.597	95.000
15	0.9999	-0.0079	1.0001	1.0001	0.0001	1.0000	112.100	30.456	248.900
16	0.9999	-0.0036	1.0000	1.0001	0.0000	1.0000	139.200	185.169	304.100
17	0.9999	-0.0034	1.0000	1.0001	0.0001	1.0000	87.700	123.056	204.100
18	0.9999	-0.0027	1.0000	1.0001	0.0001	1.0000	113.800	198.964	275.900
19	0.9999	-0.0028	1.0000	1.0001	0.0	1.0000	16.500	20.191	32.800
20	0.9999	-0.0065	1.0001	1.0001	0.0000	1.0000	21.700	7.327	37.900
21	1.0002	0.0194	0.9998	0.9998	-0.0000	1.0000	560.800	2.512	999.300
22	1.0000	0.0000	1.0000	1.0001	0.0	1.0000	287.700	520.458	551.700
23	0.9999	-0.0012	1.0000	1.0001	0.0000	1.0000	418.500	464.246	559.700
24	0.9999	-0.0010	1.0000	1.0000	0.0	1.0000	744.500	850.499	1007.600
25	1.0000	-0.0011	1.0000	1.0001	0.0000	1.0000	173.200	178.404	250.300
26	1.0000	-0.0006	1.0000	0.9999	0.0000	1.0000	673.600	772.532	943.500
27	0.9999	-0.0029	1.0000	1.0000	0.0000	1.0000	58.500	35.585	83.000
28	0.9999	-0.0029	1.0000	1.0000	0.0	1.0000	145.000	93.588	218.300
29	0.9999	-0.0031	1.0000	1.0001	0.0000	1.0000	102.500	60.742	141.700
30	0.9999	-0.0030	1.0000	1.0001	0.0000	1.0000	152.500	103.960	211.500
31	0.9999	-0.0021	1.0000	0.9998	0.0000	1.0000	205.900	202.147	327.900
32	0.9999	-0.0004	1.0000	1.0001	0.0000	1.0000	23.200	40.282	43.000
33	0.9999	-0.0004	1.0000	1.0001	0.0000	1.0000	125.800	197.387	210.700
34	0.9999	-0.0032	1.0000	1.0001	0.0000	1.0000	91.300	65.600	152.700
35	0.9999	-0.0016	1.0000	1.0001	0.0000	1.0000	22.700	25.663	34.000
36	0.9999	-0.0002	1.0000	1.0001	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.00361 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Forty-second Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TCTL-OUTPT
1	0.9999	-0.0049	1.0000	1.0001	0.0	1.0000	175.300	59.677	635.600
2	0.9999	-0.0037	1.0000	1.0001	0.0000	1.0000	252.200	104.238	418.400
3	0.9999	-0.0010	1.0000	1.0001	0.0000	1.0000	157.000	411.676	505.300
4	0.9999	-0.0028	1.0000	1.0001	0.0000	1.0000	25.900	20.662	37.800
5	1.0000	-0.0037	1.0000	1.0001	0.0000	1.0000	12.100	1.321	24.200
6	0.9999	-0.0006	1.0000	1.0001	0.0000	1.0000	8.700	15.953	17.400
7	0.9999	-0.0052	1.0001	1.0001	0.0001	1.0000	16.300	4.675	35.300
8	0.9999	-0.0043	1.0000	1.0001	0.0000	1.0000	66.200	35.270	125.700
9	0.9999	-0.0028	1.0000	1.0000	0.0000	1.0000	19.500	34.066	69.500
10	1.0000	-0.0010	1.0000	0.9998	0.0	1.0000	110.800	290.440	409.600
11	0.9999	-0.0047	1.0000	1.0001	0.0000	1.0000	52.400	27.806	95.000
12	0.9999	-0.0013	1.0000	1.0001	0.0001	1.0000	2.100	3.400	4.300
13	0.9999	-0.0064	1.0001	1.0001	0.0000	1.0000	103.800	16.145	196.400
14	0.9999	-0.0078	1.0001	1.0001	0.0000	1.0000	46.400	3.597	95.000
15	0.9999	-0.0067	1.0001	1.0001	0.0000	1.0000	112.100	30.456	248.900
16	0.9999	-0.0030	1.0000	1.0001	0.0000	1.0000	139.200	185.169	304.100
17	0.9999	-0.0028	1.0000	1.0001	0.0000	1.0000	87.700	123.056	204.100
18	0.9999	-0.0022	1.0000	1.0001	0.0000	1.0000	113.800	198.964	275.900
19	0.9999	-0.0023	1.0000	1.0001	0.0	1.0000	16.500	20.191	32.800
20	0.9999	-0.0055	1.0001	1.0001	0.0	1.0000	21.700	7.327	37.900
21	1.0002	0.0160	0.9998	0.9998	0.0	1.0000	560.800	2.512	999.300
22	1.0000	0.0000	1.0000	1.0001	0.0000	1.0000	287.700	520.458	551.700
23	0.9999	-0.0010	1.0000	1.0000	0.0000	1.0000	418.500	464.246	559.700
24	0.9999	-0.0008	1.0000	1.0000	0.0	1.0000	744.500	850.459	1007.600
25	1.0000	-0.0009	1.0000	1.0001	0.0000	1.0000	173.200	178.404	250.300
26	1.0000	-0.0005	1.0000	1.0000	0.0	1.0000	673.600	772.532	943.500
27	0.9999	-0.0025	1.0000	1.0000	0.0	1.0000	58.500	35.585	83.000
28	0.9999	-0.0025	1.0000	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	0.9999	-0.0026	1.0000	1.0001	0.0000	1.0000	102.500	60.742	141.700
30	0.9999	-0.0025	1.0000	1.0001	0.0000	1.0000	152.500	103.960	211.500
31	0.9999	-0.0018	1.0000	0.9998	0.0000	1.0000	205.900	202.147	327.900
32	0.9999	-0.0003	1.0000	1.0001	0.0	1.0000	23.200	40.282	43.000
33	0.9999	-0.0009	1.0000	1.0001	0.0000	1.0000	125.800	197.387	210.700
34	0.9999	-0.0027	1.0000	1.0001	0.0000	1.0000	91.300	65.600	152.700
35	0.9999	-0.0013	1.0000	1.0001	0.0000	1.0000	22.700	25.663	34.000
36	0.9999	-0.0001	1.0000	1.0001	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.00302 AVERAGE S-RESID= 0.00002

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Forty-third Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	0.9999	-0.0041	1.0000	1.0001	0.0001	1.0000	175.300	59.677	635.600
2	1.0000	-0.0030	1.0000	1.0001	0.0000	1.0000	252.200	104.238	418.400
3	0.9999	-0.0009	1.0000	1.0001	0.0001	1.0000	157.000	411.676	505.300
4	0.9999	-0.0024	1.0000	1.0001	0.0000	1.0000	25.900	20.662	37.800
5	1.0000	-0.0032	1.0000	1.0000	0.0000	1.0000	12.100	1.321	24.200
6	0.9999	-0.0005	1.0000	1.0001	0.0000	1.0000	8.700	15.953	17.400
7	0.9999	-0.0044	1.0000	1.0001	0.0000	1.0000	16.300	4.675	35.300
8	0.9999	-0.0036	1.0000	1.0001	0.0000	1.0000	66.200	35.270	125.700
9	0.9999	-0.0024	1.0000	1.0000	0.0	1.0000	19.500	34.066	69.500
10	1.0000	-0.0005	1.0000	0.9998	0.0001	1.0000	110.800	290.440	409.600
11	0.9999	-0.0039	1.0000	1.0001	0.0001	1.0000	52.400	27.806	95.000
12	0.9999	-0.0011	1.0000	1.0001	0.0000	1.0000	2.100	3.400	4.300
13	0.9999	-0.0054	1.0001	1.0001	0.0000	1.0000	103.800	16.145	196.400
14	0.9999	-0.0065	1.0001	1.0001	0.0	1.0000	46.400	3.597	95.000
15	0.9999	-0.0056	1.0001	1.0001	0.0000	1.0000	112.100	30.456	248.900
16	0.9999	-0.0025	1.0000	1.0001	0.0000	1.0000	139.200	185.169	304.100
17	0.9999	-0.0024	1.0000	1.0001	0.0001	1.0000	87.700	122.056	204.100
18	0.9999	-0.0019	1.0000	1.0001	0.0000	1.0000	113.800	198.964	275.900
19	0.9999	-0.0019	1.0000	1.0001	0.0000	1.0000	16.500	20.191	32.800
20	0.9999	-0.0045	1.0000	1.0001	0.0	1.0000	21.700	7.327	37.900
21	1.0002	0.0132	0.9999	0.9999	0.0	1.0000	560.800	2.512	999.300
22	1.0000	0.0000	1.0000	1.0001	0.0000	1.0000	287.700	520.458	551.700
23	0.9999	-0.0008	1.0000	1.0000	0.0000	1.0000	418.500	464.246	559.700
24	0.9999	-0.0007	1.0000	1.0000	0.0000	1.0000	744.500	850.459	1007.600
25	1.0000	-0.0008	1.0000	1.0000	0.0000	1.0000	173.200	178.404	250.300
26	1.0000	-0.0005	1.0000	1.0000	0.0	1.0000	673.600	772.532	943.500
27	1.0000	-0.0020	1.0000	1.0000	0.0	1.0000	58.500	35.585	83.000
28	1.0000	-0.0021	1.0000	1.0000	0.0	1.0000	145.000	93.588	218.300
29	1.0000	-0.0023	1.0000	1.0000	0.0000	1.0000	102.500	60.742	141.700
30	1.0000	-0.0021	1.0000	1.0000	0.0	1.0000	152.500	103.960	211.500
31	1.0000	-0.0015	1.0000	0.9998	-0.0000	1.0000	205.900	202.147	327.900
32	1.0000	-0.0003	1.0000	1.0000	0.0000	1.0000	23.200	40.282	43.000
33	1.0000	-0.0003	1.0000	1.0000	0.0000	1.0000	125.800	197.387	210.700
34	1.0000	-0.0022	1.0000	1.0001	0.0000	1.0000	91.300	65.600	152.700
35	0.9999	-0.0011	1.0000	1.0001	-0.0000	1.0000	22.700	25.663	34.000
36	0.9999	-0.0001	1.0000	1.0000	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.00252 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Forty-fourth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	1.0000	-0.0035	1.0000	1.0000	-0.0000	1.0000	175.300	59.677	635.600
2	1.0000	-0.0026	1.0000	1.0000	0.0000	1.0000	252.200	104.238	418.400
3	1.0000	-0.0007	1.0000	1.0000	0.0	1.0000	157.000	411.676	505.300
4	0.9999	-0.0020	1.0000	1.0001	0.0000	1.0000	25.900	20.662	37.800
5	1.0000	-0.0026	1.0000	1.0000	0.0000	1.0000	12.100	1.321	24.200
6	0.9999	-0.0004	1.0000	1.0001	0.0001	1.0000	8.700	15.953	17.400
7	0.9999	-0.0036	1.0000	1.0000	0.0000	1.0000	16.300	4.675	35.300
8	0.9999	-0.0031	1.0000	1.0000	0.0000	1.0000	66.200	35.270	125.700
9	1.0000	-0.0020	1.0000	1.0000	0.0001	1.0000	19.500	34.066	69.500
10	1.0000	-0.0007	1.0000	0.9999	0.0001	1.0000	110.800	290.440	409.600
11	0.9999	-0.0032	1.0000	1.0001	0.0001	1.0000	52.400	27.806	95.000
12	0.9999	-0.0009	1.0000	1.0000	0.0000	1.0000	2.100	3.400	4.300
13	0.9999	-0.0045	1.0000	1.0001	0.0001	1.0000	103.800	16.145	196.400
14	0.9999	-0.0054	1.0001	1.0001	0.0000	1.0000	46.400	3.597	95.000
15	0.9999	-0.0047	1.0000	1.0001	0.0000	1.0000	112.100	30.456	248.900
16	0.9999	-0.0021	1.0000	1.0001	0.0000	1.0000	139.200	185.169	304.100
17	0.9999	-0.0020	1.0000	1.0001	0.0000	1.0000	87.700	123.056	204.100
18	0.9999	-0.0016	1.0000	1.0001	0.0001	1.0000	113.800	198.964	275.900
19	0.9999	-0.0016	1.0000	1.0001	0.0000	1.0000	16.500	20.191	32.800
20	0.9999	-0.0039	1.0000	1.0000	0.0	1.0000	21.700	7.327	37.900
21	1.0001	0.0108	0.9999	0.9999	-0.0000	1.0000	560.800	2.512	599.300
22	1.0000	0.0000	1.0000	1.0001	0.0	1.0000	287.700	520.458	551.700
23	1.0000	-0.0007	1.0000	1.0000	0.0000	1.0000	418.500	464.246	559.700
24	1.0000	-0.0006	1.0000	1.0000	0.0000	1.0000	744.500	850.459	1007.600
25	1.0000	-0.0007	1.0000	1.0000	0.0000	1.0000	173.200	178.404	250.300
26	1.0000	-0.0004	1.0000	1.0000	0.0000	1.0000	673.600	772.532	943.500
27	1.0000	-0.0017	1.0000	1.0000	0.0	1.0000	58.500	35.585	83.000
28	1.0000	-0.0017	1.0000	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	1.0000	-0.0019	1.0000	1.0000	0.0000	1.0000	102.500	60.742	141.700
30	1.0000	-0.0018	1.0000	1.0000	0.0000	1.0000	152.500	103.960	211.500
31	1.0000	-0.0013	1.0000	0.9999	0.0	1.0000	205.900	202.147	327.900
32	1.0000	-0.0002	1.0000	1.0000	0.0001	1.0000	23.200	40.282	43.000
33	1.0000	-0.0002	1.0000	1.0000	0.0000	1.0000	125.800	197.387	210.700
34	1.0000	-0.0019	1.0000	1.0000	0.0001	1.0000	91.300	65.600	152.700
35	1.0000	-0.0009	1.0000	1.0000	0.0000	1.0000	22.700	25.663	34.000
36	1.0000	-0.0001	1.0000	1.0000	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.00212 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Forty-fifth Iteration

NO	R-VALUE	R-RESID	RCDFSUM	S-VALUE	S-RESID	SCDFSUM	VAL-ADD	FNL-DEM	TCTL-OUTPT
1	1.0000	-0.0029	1.0000	1.0000	0.0001	1.0000	175.200	59.677	635.600
2	1.0000	-0.0020	1.0000	1.0000	0.0000	1.0000	252.200	104.238	418.400
3	1.0000	-0.0006	1.0000	1.0000	0.0	1.0000	157.000	411.676	505.300
4	1.0000	-0.0017	1.0000	1.0000	0.0000	1.0000	25.900	20.662	37.800
5	1.0000	-0.0023	1.0000	1.0000	0.0000	1.0000	12.100	1.321	24.200
6	0.9999	-0.0004	1.0000	1.0000	0.0001	1.0000	8.700	15.953	17.400
7	1.0000	-0.0021	1.0000	1.0000	0.0001	1.0000	16.300	4.675	35.300
8	1.0000	-0.0026	1.0000	1.0000	0.0000	1.0000	66.200	35.270	125.700
9	1.0000	-0.0018	1.0000	1.0000	0.0000	1.0000	19.500	34.066	69.500
10	1.0000	-0.0006	1.0000	0.9999	0.0	1.0000	110.800	290.440	409.600
11	1.0000	-0.0029	1.0000	1.0000	-0.0000	1.0000	52.400	27.806	95.000
12	1.0000	-0.0008	1.0000	1.0000	0.0000	1.0000	2.100	3.400	4.300
13	1.0000	-0.0039	1.0000	1.0000	0.0000	1.0000	103.800	16.145	196.400
14	0.9999	-0.0046	1.0000	1.0000	0.0000	1.0000	46.400	3.597	95.000
15	0.9999	-0.0040	1.0000	1.0001	0.0000	1.0000	112.100	30.456	248.900
16	0.9999	-0.0018	1.0000	1.0001	0.0000	1.0000	139.200	185.169	304.100
17	1.0000	-0.0017	1.0000	1.0000	0.0001	1.0000	87.700	123.056	204.100
18	0.9999	-0.0013	1.0000	1.0001	0.0	1.0000	113.800	198.964	275.900
19	1.0000	-0.0014	1.0000	1.0000	0.0	1.0000	16.500	20.191	32.800
20	1.0000	-0.0033	1.0000	1.0000	0.0000	1.0000	21.700	7.327	37.900
21	1.0001	0.0088	0.9999	0.9999	0.0	1.0000	560.800	2.512	999.300
22	1.0000	-0.0000	1.0000	1.0000	0.0	1.0000	287.700	520.458	551.700
23	1.0000	-0.0006	1.0000	1.0000	0.0000	1.0000	418.500	464.246	559.700
24	1.0000	-0.0005	1.0000	1.0000	0.0000	1.0000	744.500	850.459	1007.600
25	1.0000	-0.0006	1.0000	1.0000	0.0000	1.0000	173.200	178.404	250.300
26	1.0000	-0.0003	1.0000	1.0000	-0.0000	1.0000	673.600	772.532	943.500
27	1.0000	-0.0015	1.0000	1.0000	0.0	1.0000	58.500	35.585	83.000
28	1.0000	-0.0015	1.0000	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	1.0000	-0.0016	1.0000	1.0000	0.0000	1.0000	102.500	60.742	141.700
30	1.0000	-0.0016	1.0000	1.0000	0.0000	1.0000	152.500	103.960	211.500
31	1.0000	-0.0011	1.0000	0.9999	0.0	1.0000	205.900	202.147	327.900
32	1.0000	-0.0002	1.0000	1.0000	-0.0000	1.0000	23.200	40.282	43.000
33	1.0000	-0.0002	1.0000	1.0000	0.0000	1.0000	125.800	197.387	210.700
34	1.0000	-0.0016	1.0000	1.0000	0.0000	1.0000	91.300	65.600	152.700
35	1.0000	-0.0008	1.0000	1.0000	0.0000	1.0000	22.700	25.663	34.000
36	1.0000	-0.0001	1.0000	1.0000	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.00180 AVERAGE S-RESID= 0.00002

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

Forty-sixth Iteration

NO	R-VALUE	R-RESID	RCUFSUM	S-VALUE	S-RESID	SCUFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	1.0000	-0.0025	1.0000	1.0000	0.0000	1.0000	175.300	59.677	235.600
2	1.0000	-0.0019	1.0000	1.0000	0.0000	1.0000	252.200	104.238	418.400
3	1.0000	-0.0005	1.0000	1.0000	0.0000	1.0000	157.000	411.676	505.300
4	1.0000	-0.0015	1.0000	1.0000	0.0000	1.0000	25.900	20.662	37.800
5	1.0000	-0.0020	1.0000	1.0000	0.0000	1.0000	12.100	1.321	24.200
6	1.0000	-0.0003	1.0000	1.0000	0.0000	1.0000	8.700	15.953	17.400
7	1.0000	-0.0026	1.0000	1.0000	0.0	1.0000	16.300	4.675	35.300
8	1.0000	-0.0022	1.0000	1.0000	0.0000	1.0000	66.200	35.270	125.700
9	1.0000	-0.0015	1.0000	1.0000	0.0000	1.0000	19.500	34.066	69.500
10	1.0000	-0.0005	1.0000	0.9999	0.0001	1.0000	110.800	290.440	409.600
11	1.0000	-0.0024	1.0000	1.0000	-0.0000	1.0000	52.400	27.806	95.000
12	1.0000	-0.0007	1.0000	1.0000	0.0000	1.0000	2.100	3.400	4.300
13	1.0000	-0.0032	1.0000	1.0000	0.0000	1.0000	103.800	16.145	196.400
14	1.0000	-0.0038	1.0000	1.0000	0.0000	1.0000	46.400	3.597	95.000
15	1.0000	-0.0033	1.0000	1.0000	0.0000	1.0000	112.100	30.456	248.900
16	1.0000	-0.0015	1.0000	1.0000	0.0000	1.0000	139.200	185.169	304.100
17	1.0000	-0.0014	1.0000	1.0000	0.0000	1.0000	87.700	123.056	204.100
18	1.0000	-0.0011	1.0000	1.0000	0.0001	1.0000	113.800	198.964	275.900
19	1.0000	-0.0012	1.0000	1.0000	0.0000	1.0000	16.500	20.191	32.800
20	1.0000	-0.0029	1.0000	1.0000	0.0001	1.0000	21.700	7.327	37.900
21	1.0001	0.0072	0.9999	0.9999	-0.0000	1.0000	560.800	2.512	999.300
22	1.0000	-0.0000	1.0000	1.0000	0.0000	1.0000	287.700	520.458	551.700
23	1.0000	-0.0005	1.0000	1.0000	0.0000	1.0000	418.500	464.246	559.700
24	1.0000	-0.0004	1.0000	1.0000	0.0000	1.0000	744.500	850.459	1007.600
25	1.0000	-0.0005	1.0000	1.0000	0.0000	1.0000	173.200	178.404	250.300
26	1.0000	-0.0003	1.0000	1.0000	-0.0000	1.0000	673.600	772.532	943.500
27	1.0000	-0.0013	1.0000	1.0000	0.0000	1.0000	58.500	35.585	83.000
28	1.0000	-0.0013	1.0000	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	1.0000	-0.0014	1.0000	1.0000	0.0000	1.0000	102.500	60.742	141.700
30	1.0000	-0.0013	1.0000	1.0000	0.0000	1.0000	152.500	103.960	211.500
31	1.0000	-0.0009	1.0000	0.9999	0.0000	1.0000	205.900	202.147	327.900
32	1.0000	-0.0002	1.0000	1.0000	0.0	1.0000	23.200	40.282	43.000
33	1.0000	-0.0002	1.0000	1.0000	0.0000	1.0000	125.800	197.387	210.700
34	1.0000	-0.0014	1.0000	1.0000	0.0000	1.0000	91.300	65.600	152.700
35	1.0000	-0.0007	1.0000	1.0000	0.0000	1.0000	22.700	25.663	34.000
36	1.0000	-0.0001	1.0000	1.0000	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.00151 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Forty-seventh Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	1.0000	-0.0022	1.0000	1.0000	-0.0000	1.0000	175.300	59.677	635.600
2	1.0000	-0.0016	1.0000	1.0000	0.0000	1.0000	252.200	104.238	418.400
3	1.0000	-0.0005	1.0000	1.0000	-0.0000	1.0000	157.000	411.676	505.300
4	1.0000	-0.0013	1.0000	1.0000	0.0000	1.0000	25.900	20.662	37.800
5	1.0000	-0.0016	1.0000	1.0000	0.0000	1.0000	12.100	1.321	24.200
6	1.0000	-0.0002	1.0000	1.0000	0.0000	1.0000	8.700	15.953	17.400
7	1.0000	-0.0023	1.0000	1.0000	0.0000	1.0000	16.300	4.675	35.300
8	1.0000	-0.0019	1.0000	1.0000	0.0001	1.0000	66.200	35.270	125.700
9	1.0000	-0.0012	1.0000	1.0000	0.0001	1.0000	19.500	34.066	69.500
10	1.0000	-0.0005	1.0000	0.9999	0.0	1.0000	110.800	290.440	409.600
11	1.0000	-0.0020	1.0000	1.0000	0.0001	1.0000	52.400	27.806	95.000
12	1.0000	-0.0005	1.0000	1.0000	0.0000	1.0000	2.100	3.400	4.300
13	1.0000	-0.0028	1.0000	1.0000	0.0000	1.0000	103.800	16.145	196.400
14	1.0000	-0.0033	1.0000	1.0000	0.0001	1.0000	46.400	3.597	95.000
15	1.0000	-0.0028	1.0000	1.0000	0.0000	1.0000	112.100	30.456	248.900
16	1.0000	-0.0013	1.0000	1.0000	0.0001	1.0000	139.200	185.169	304.100
17	1.0000	-0.0012	1.0000	1.0000	0.0000	1.0000	87.100	123.056	204.100
18	1.0000	-0.0010	1.0000	1.0000	0.0000	1.0000	113.000	198.964	275.900
19	1.0000	-0.0010	1.0000	1.0000	0.0	1.0000	16.500	20.191	32.800
20	1.0000	-0.0023	1.0000	1.0000	0.0000	1.0000	21.700	7.327	37.900
21	1.0001	0.0059	0.9999	0.9999	-0.0000	1.0000	560.600	2.512	999.300
22	1.0000	-0.0000	1.0000	1.0000	0.0	1.0000	287.100	520.458	551.700
23	1.0000	-0.0004	1.0000	1.0000	0.0000	1.0000	418.500	464.246	559.700
24	1.0000	-0.0004	1.0000	1.0000	0.0000	1.0000	744.500	850.459	1007.600
25	1.0000	-0.0004	1.0000	1.0000	0.0000	1.0000	173.200	178.404	250.300
26	1.0000	-0.0003	1.0000	1.0000	0.0000	1.0000	673.600	772.532	943.500
27	1.0000	-0.0011	1.0000	1.0000	-0.0000	1.0000	58.500	35.585	83.000
28	1.0000	-0.0011	1.0000	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	1.0000	-0.0012	1.0000	1.0000	0.0000	1.0000	102.500	60.742	141.700
30	1.0000	-0.0011	1.0000	1.0000	0.0000	1.0000	152.500	103.960	211.500
31	1.0000	-0.0008	1.0000	0.9999	-0.0000	1.0000	205.500	202.147	327.900
32	1.0000	-0.0001	1.0000	1.0000	0.0	1.0000	23.200	40.282	43.000
33	1.0000	-0.0001	1.0000	1.0000	0.0000	1.0000	125.800	197.387	210.700
34	1.0000	-0.0012	1.0000	1.0000	0.0000	1.0000	91.300	65.600	152.700
35	1.0000	-0.0006	1.0000	1.0000	0.0000	1.0000	22.700	25.663	34.000
36	1.0000	-0.0001	1.0000	1.0000	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.00128 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX III (Continued)

Forty-eighth Iteration

NO	R-VALUE	R-RESID	FCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	1.0000	-0.0018	1.0000	1.0000	0.0	1.0000	175.200	59.677	235.600
2	1.0000	-0.0014	1.0000	1.0000	0.0000	1.0000	252.200	104.238	418.400
3	1.0000	-0.0004	1.0000	1.0000	0.0000	1.0000	157.000	411.676	505.300
4	1.0000	-0.0010	1.0000	1.0000	0.0000	1.0000	25.900	20.662	37.800
5	1.0000	-0.0015	1.0000	1.0000	0.0000	1.0000	12.100	1.321	24.200
6	1.0000	-0.0002	1.0000	1.0000	0.0000	1.0000	8.700	15.953	17.400
7	1.0000	-0.0020	1.0000	1.0000	0.0000	1.0000	16.300	4.675	35.300
8	1.0000	-0.0017	1.0000	1.0000	0.0000	1.0000	66.200	35.270	125.700
9	1.0000	-0.0011	1.0000	1.0000	0.0001	1.0000	19.500	34.066	69.500
10	1.0000	-0.0004	1.0000	0.9999	0.0	1.0000	110.800	290.440	409.600
11	1.0000	-0.0017	1.0000	1.0000	-0.0000	1.0000	52.400	27.806	95.000
12	1.0000	-0.0005	1.0000	1.0000	0.0001	1.0000	2.100	3.400	4.300
13	1.0000	-0.0024	1.0000	1.0000	0.0000	1.0000	103.800	16.145	196.400
14	1.0000	-0.0028	1.0000	1.0000	0.0000	1.0000	46.400	3.597	95.000
15	1.0000	-0.0024	1.0000	1.0000	0.0000	1.0000	112.100	30.456	248.900
16	1.0000	-0.0011	1.0000	1.0000	0.0001	1.0000	139.200	185.169	304.100
17	1.0000	-0.0010	1.0000	1.0000	0.0000	1.0000	87.700	123.056	204.100
18	1.0000	-0.0006	1.0000	1.0000	0.0000	1.0000	113.800	198.964	275.900
19	1.0000	-0.0009	1.0000	1.0000	0.0000	1.0000	16.500	20.191	32.800
20	1.0000	-0.0020	1.0000	1.0000	0.0000	1.0000	21.700	7.327	37.900
21	1.0001	0.0045	1.0000	0.9999	0.0000	1.0000	560.800	2.512	999.300
22	1.0000	-0.0000	1.0000	1.0000	0.0	1.0000	287.700	520.458	551.700
23	1.0000	-0.0004	1.0000	1.0000	0.0000	1.0000	418.500	464.246	559.700
24	1.0000	-0.0003	1.0000	1.0000	0.0	1.0000	744.500	850.459	1007.600
25	1.0000	-0.0004	1.0000	1.0000	0.0000	1.0000	173.200	178.404	250.300
26	1.0000	-0.0002	1.0000	1.0000	-0.0000	1.0000	673.600	772.532	943.500
27	1.0000	-0.0010	1.0000	1.0000	0.0000	1.0000	58.500	35.585	83.000
28	1.0000	-0.0010	1.0000	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	1.0000	-0.0010	1.0000	1.0000	0.0000	1.0000	102.500	60.742	141.700
30	1.0000	-0.0010	1.0000	1.0000	0.0000	1.0000	152.500	103.960	211.500
31	1.0000	-0.0007	1.0000	0.9999	0.0000	1.0000	205.900	202.147	327.900
32	1.0000	-0.0001	1.0000	1.0000	-0.0000	1.0000	23.200	40.282	43.000
33	1.0000	-0.0001	1.0000	1.0000	0.0000	1.0000	125.800	197.387	210.700
34	1.0000	-0.0010	1.0000	1.0000	0.0000	1.0000	91.300	65.600	152.700
35	1.0000	-0.0005	1.0000	1.0000	0.0000	1.0000	22.700	25.663	34.000
36	1.0000	-0.0001	1.0000	1.0000	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.00111 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

Forty-ninth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	1.0000	-0.0016	1.0000	1.0000	0.0000	1.0000	175.300	59.677	635.600
2	1.0000	-0.0011	1.0000	1.0000	0.0000	1.0000	252.200	104.238	418.400
3	1.0000	-0.0003	1.0000	1.0000	0.0000	1.0000	157.000	411.676	505.300
4	1.0000	-0.0005	1.0000	1.0000	0.0000	1.0000	25.900	20.662	37.800
5	1.0000	-0.0014	1.0000	1.0000	0.0000	1.0000	12.100	1.321	24.200
6	1.0000	-0.0002	1.0000	1.0000	0.0001	1.0000	8.700	15.953	17.400
7	1.0000	-0.0017	1.0000	1.0000	0.0001	1.0000	16.300	4.675	35.300
8	1.0000	-0.0014	1.0000	1.0000	0.0001	1.0000	66.200	35.270	125.700
9	1.0000	-0.0010	1.0000	1.0000	0.0000	1.0000	19.500	34.068	69.500
10	1.0000	-0.0004	1.0000	1.0000	0.0	1.0000	110.800	290.440	409.600
11	1.0000	-0.0015	1.0000	1.0000	0.0	1.0000	52.400	27.806	95.000
12	1.0000	-0.0004	1.0000	1.0000	0.0001	1.0000	2.100	3.400	4.300
13	1.0000	-0.0020	1.0000	1.0000	-0.0000	1.0000	103.600	16.145	196.400
14	1.0000	-0.0024	1.0000	1.0000	0.0000	1.0000	46.400	3.597	95.000
15	1.0000	-0.0021	1.0000	1.0000	0.0000	1.0000	112.100	30.456	248.900
16	1.0000	-0.0009	1.0000	1.0000	0.0001	1.0000	139.200	185.169	304.100
17	1.0000	-0.0009	1.0000	1.0000	0.0000	1.0000	87.700	123.056	204.100
18	1.0000	-0.0007	1.0000	1.0000	0.0000	1.0000	113.800	198.964	275.900
19	1.0000	-0.0008	1.0000	1.0000	0.0000	1.0000	16.500	20.191	32.800
20	1.0000	-0.0018	1.0000	1.0000	0.0000	1.0000	21.700	7.327	37.900
21	1.0000	0.0035	1.0000	1.0000	0.0000	1.0000	560.600	2.512	999.300
22	1.0000	-0.0000	1.0000	1.0000	0.0	1.0000	287.700	520.458	551.700
23	1.0000	-0.0003	1.0000	1.0000	0.0000	1.0000	418.500	464.246	559.700
24	1.0000	-0.0003	1.0000	1.0000	0.0000	1.0000	744.500	850.459	1007.600
25	1.0000	-0.0003	1.0000	1.0000	0.0000	1.0000	173.200	178.404	250.300
26	1.0000	-0.0002	1.0000	1.0000	0.0	1.0000	673.600	772.532	943.500
27	1.0000	-0.0008	1.0000	1.0000	0.0000	1.0000	58.500	35.585	83.000
28	1.0000	-0.0009	1.0000	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	1.0000	-0.0005	1.0000	1.0000	0.0000	1.0000	102.500	60.742	141.700
30	1.0000	-0.0008	1.0000	1.0000	0.0000	1.0000	152.500	103.960	211.500
31	1.0000	-0.0006	1.0000	1.0000	0.0000	1.0000	205.500	202.147	327.900
32	1.0000	-0.0001	1.0000	1.0000	-0.0001	1.0000	23.200	40.282	43.000
33	1.0000	-0.0001	1.0000	1.0000	0.0000	1.0000	125.600	197.387	210.700
34	1.0000	-0.0005	1.0000	1.0000	0.0	1.0000	91.300	65.600	152.700
35	1.0000	-0.0004	1.0000	1.0000	0.0000	1.0000	22.700	25.663	34.000
36	1.0000	-0.0000	1.0000	1.0000	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.00005 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

Fiftieth Iteration

NO	R-VALUE	R-RESID	RCOFSUM	S-VALUE	S-RESID	SCOFSUM	VAL-ADD	FNL-DEM	TOTL-OUTPT
1	1.0000	-0.0013	1.0000	1.0000	-0.0000	1.0000	175.300	59.677	635.600
2	1.0000	-0.0011	1.0000	1.0000	0.0000	1.0000	252.200	104.238	418.400
3	1.0000	-0.0003	1.0000	1.0000	0.0001	1.0000	157.000	411.676	505.300
4	1.0000	-0.0008	1.0000	1.0000	0.0000	1.0000	25.900	20.662	37.800
5	1.0000	-0.0011	1.0000	1.0000	0.0000	1.0000	12.100	1.321	24.200
6	1.0000	-0.0002	1.0000	1.0000	0.0000	1.0000	8.700	15.953	17.400
7	1.0000	-0.0015	1.0000	1.0000	0.0001	1.0000	16.300	4.675	35.300
8	1.0000	-0.0012	1.0000	1.0000	0.0000	1.0000	66.200	35.270	125.700
9	1.0000	-0.0009	1.0000	1.0000	0.0001	1.0000	19.500	34.066	69.500
10	1.0000	-0.0003	1.0000	1.0000	0.0	1.0000	110.600	290.440	409.600
11	1.0000	-0.0012	1.0000	1.0000	0.0000	1.0000	52.400	27.806	95.000
12	1.0000	-0.0004	1.0000	1.0000	0.0000	1.0000	2.100	3.400	4.300
13	1.0000	-0.0017	1.0000	1.0000	-0.0000	1.0000	103.800	16.145	196.400
14	1.0000	-0.0020	1.0000	1.0000	0.0001	1.0000	46.400	3.597	95.000
15	1.0000	-0.0018	1.0000	1.0000	0.0000	1.0000	112.100	30.456	248.900
16	1.0000	-0.0008	1.0000	1.0000	0.0000	1.0000	139.200	185.169	304.100
17	1.0000	-0.0008	1.0000	1.0000	0.0000	1.0000	87.700	123.056	204.100
18	1.0000	-0.0006	1.0000	1.0000	0.0001	1.0000	113.800	198.964	275.900
19	1.0000	-0.0006	1.0000	1.0000	0.0000	1.0000	16.500	20.191	32.800
20	1.0000	-0.0015	1.0000	1.0000	0.0000	1.0000	21.700	7.327	37.900
21	1.0000	0.0031	1.0000	1.0000	-0.0000	1.0000	560.800	2.512	999.300
22	1.0000	-0.0000	1.0000	1.0000	0.0	1.0000	287.700	520.458	551.700
23	1.0000	-0.0003	1.0000	1.0000	0.0000	1.0000	418.500	464.246	559.700
24	1.0000	-0.0002	1.0000	1.0000	0.0000	1.0000	744.500	850.459	1007.600
25	1.0000	-0.0003	1.0000	1.0000	0.0000	1.0000	173.200	178.404	250.300
26	1.0000	-0.0002	1.0000	1.0000	0.0	1.0000	673.600	772.532	943.500
27	1.0000	-0.0008	1.0000	1.0000	0.0000	1.0000	58.500	35.585	83.000
28	1.0000	-0.0007	1.0000	1.0000	0.0000	1.0000	145.000	93.588	218.300
29	1.0000	-0.0008	1.0000	1.0000	0.0000	1.0000	102.500	60.742	141.700
30	1.0000	-0.0008	1.0000	1.0000	0.0000	1.0000	152.500	103.960	211.500
31	1.0000	-0.0005	1.0000	1.0000	0.0	1.0000	205.900	202.147	327.900
32	1.0000	-0.0001	1.0000	1.0000	0.0000	1.0000	23.200	40.282	43.000
33	1.0000	-0.0001	1.0000	1.0000	0.0	1.0000	125.800	197.387	210.700
34	1.0000	-0.0008	1.0000	1.0000	0.0000	1.0000	91.300	65.600	152.700
35	1.0000	-0.0004	1.0000	1.0000	0.0000	1.0000	22.700	25.663	34.000
36	1.0000	-0.0000	1.0000	1.0000	0.0000	1.0000	404.100	521.859	537.300

AVERAGE R-RESID= 0.00001 AVERAGE S-RESID= 0.00003

TOTAL FINAL DEMAND= 5729.484 TOTAL VALUE-ADD= 5729.484

APPENDIX IV

COEFFICIENTS OF LOCATION QUOTIENT, OKLAHOMA, 1963

Industry	Nation		Oklahoma		Coefficients of Location Quotient
	(X_T^{US})	X_i^{US}/X_T^{US}	(X_T^{OK})	X_i^{OK}/X_T^{OK}	$\frac{X_i^{OK}/X_T^{OK}}{X_i^{US}/X_T^{US}}$
1	951,879	0.02803	8,117.10	0.08040	2.86835
2	947,485	0.02877	8,113.17	0.03140	1.09141
3	991,268	0.07491	8,567.89	0.05560	0.74220
4	772,833	0.02332	6,583.24	0.00560	0.24010
5	949,214	0.01122	7,518.28	0.00320	0.00001
6	845,770	0.00708	7,038.62	0.00230	0.32480
7	912,567	0.01957	7,397.67	0.00390	0.19920
8	883,654	0.01842	7,203.01	0.01500	0.81430
9	997,543	0.03483	9,119.45	0.00710	0.20380
10	924,832	0.02361	7,965.75	0.05250	2.22360
11	863,055	0.01146	7,185.20	0.01100	0.95980
12	864,311	0.00508	7,848.55	0.00050	0.09840
13	963,582	0.01295	7,877.06	0.02140	1.65250
14	931,328	0.04438	7,643.88	0.01220	0.27480
15	863,055	0.02654	7,551.00	0.02460	0.92690
16	937,318	0.03781	8,026.20	0.03270	0.87710
17	931,328	0.02014	7,551.00	0.03260	1.61860
18	931,328	0.07938	7,551.00	0.02160	0.27210
19	963,582	0.00742	7,877.06	0.00310	0.41770
20	802,989	0.01034	6,620.05	0.04980	4.81620
21	789,143	0.01554	6,810.91	0.08340	5.36670
22	949,214	0.08987	7,518.28	0.07820	0.87010
23	957,280	0.04533	8,259.08	0.06561	1.44674
24	957,280	0.08063	8,259.08	0.11983	1.48617
25	688,640	0.04088	5,715.59	0.04189	1.0247
26	1,011,230	0.08844	9,166.57	0.07400	0.83670
27	947,657	0.01489	8,375.68	0.01090	0.73200
28	993,149	0.02527	9,115.52	0.01940	0.76770
29	693,856	0.00869	5,947.86	0.01910	2.19790
30	797,861	0.01224	6,421.78	0.02870	2.34470
31	893,763	0.03318	7,599.93	0.04080	1.22960
32	761,827	0.00131	6,457.91	0.00590	4.50380
33	928,371	0.01547	7,650.35	0.04680	3.02520
34	928,371	0.05042	8,214.50	0.01720	0.34110
35	696,338	0.01105	6,463.29	0.00473	0.42805
36	936,592	0.03540	8,460.09	0.05400	1.5254

See footnotes on following page.

X_i^{US} and X_i^{OK} are total outputs of the ith producing industry in U.S. and Oklahoma respectively.

X_T^{US} and X_T^{OK} are sums of total outputs of the purchasing industries in U.S. and Oklahoma.

X_i^{US}/X_T^{US} and X_i^{OK}/X_T^{OK} are the ratios of total outputs of ith producing industries to sums of total outputs of purchasing industries in U.S. and Oklahoma.

APPENDIX V

IMPORT STRUCTURE OF OKLAHOMA AS ESTIMATED BY LOCATION QUOTIENTS, 1965

Industry	1	2	3	4	5	6	7	8	9
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.01261	0.00001	0.01822	0.0	0.00004	0.0	0.00325	0.00034	0.00533
4	0.0	0.0	0.00025	0.17014	0.00182	0.00163	0.00141	0.0	0.00039
5	0.00001	0.00092	0.00020	0.0	0.18083	0.05458	0.03127	0.00100	0.00076
6	0.0	0.0	0.00006	0.0	0.00045	0.00421	0.0	0.00020	0.0
7	0.00004	0.00002	0.00239	0.00170	0.00133	0.00380	0.10225	0.05486	0.00550
8	0.00002	0.00005	0.00060	0.00003	0.00003	0.0	0.00360	0.04164	0.00026
9	0.00035	0.00635	0.00057	0.00394	0.00423	0.00061	0.01456	0.00769	0.03751
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.00002	0.00014	0.00007	0.00008	0.00010	0.00330	0.00098	0.00033	0.00064
12	0.00001	0.0	0.0	0.00033	0.00005	0.00012	0.00002	0.0	0.00002
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.00003	0.00008	0.00207	0.0	0.00178	0.01520	0.00279	0.00020	0.00695
15	0.00009	0.00011	0.00034	0.00016	0.00415	0.01200	0.00314	0.00035	0.00097
16	0.00001	0.00064	0.00003	0.00006	0.00066	0.00026	0.00077	0.00043	0.00064
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.00008	0.00045	0.00005	0.00003	0.00036	0.00051	0.00017	0.00040	0.00005
19	0.00001	0.00001	0.00001	0.00574	0.00068	0.00072	0.00017	0.00079	0.00033
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.00009	0.00028	0.00002	0.00003	0.00016	0.00005	0.00018	0.00008	0.00013
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.00028	0.00259	0.00019	0.00080	0.00105	0.00156	0.00100	0.00431	0.00062
27	0.00091	0.00082	0.00148	0.00068	0.00535	0.00271	0.00715	0.00187	0.00254
28	0.00207	0.00187	0.00335	0.00155	0.01216	0.00607	0.01621	0.00426	0.00578
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.00047	0.00387	0.00208	0.00228	0.00376	0.00390	0.00488	0.00808	0.00917
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX V (Continued)

Industry	10	11	12	13	14	15	16	17	18
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.00000	0.0	0.02049	0.00007	0.00011	0.0	0.00003	0.0	0.0
4	0.0	0.00349	0.01002	0.00093	0.00112	0.00136	0.00100	0.00106	0.00076
5	0.0	0.00183	0.00500	0.00240	0.00095	0.00279	0.00068	0.00048	0.00122
6	0.0	0.00006	0.0	0.00012	0.0	0.00030	0.00007	0.00003	0.00056
7	0.00002	0.00786	0.00513	0.00503	0.00050	0.00384	0.00087	0.00367	0.00046
8	0.0	0.00008	0.00008	0.00002	0.00094	0.00009	0.00006	0.00025	0.00015
9	0.00006	0.06904	0.00519	0.00541	0.00606	0.00494	0.00111	0.00414	0.00154
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.00374	0.00519	0.00057	0.00008	0.00063	0.00072	0.00151	0.00106
12	0.0	0.00032	0.02985	0.00002	0.00003	0.00007	0.00007	0.00002	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.00002	0.00310	0.00054	0.00270	0.11489	0.09874	0.03369	0.03086	0.02580
15	0.00000	0.00335	0.00158	0.00145	0.00475	0.01383	0.00888	0.00994	0.00973
16	0.0	0.00055	0.00018	0.00088	0.00355	0.00532	0.02233	0.00485	0.00699
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.00371	0.0	0.00034	0.00429	0.01082	0.01521	0.01729	0.13759
19	0.0	0.00314	0.00619	0.00065	0.00048	0.00087	0.00072	0.00064	0.00017
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.00001	0.00015	0.00005	0.00013	0.00029	0.00007	0.00006	0.00005	0.00006
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.00001	0.00099	0.00101	0.00061	0.00083	0.00116	0.00085	0.00070	0.00044
27	0.00005	0.00320	0.00171	0.00472	0.00018	0.00033	0.00131	0.00172	0.00157
28	0.00011	0.00730	0.00397	0.01071	0.00043	0.00077	0.00297	0.00390	0.00354
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.00003	0.00656	0.00509	0.00341	0.00368	0.00420	0.00339	0.00893	0.00356
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX V (Continued)

Industry	19	20	21	22	23	24	25	26	27
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.00061	0.0	0.0	0.00008	0.00240	0.00241	0.0	0.00025	0.00071
4	0.00290	0.0	0.0	0.00043	0.00125	0.00125	0.0	0.00030	0.00027
5	0.01166	0.00154	0.00259	0.01792	0.00042	0.00043	0.0	0.00010	0.0
6	0.00050	0.0	0.0	0.00070	0.00007	0.00010	0.0	0.00001	0.0
7	0.01121	0.00026	0.0	0.00066	0.00380	0.00380	0.00267	0.00006	0.00009
8	0.00211	0.0	0.0	0.00001	0.00075	0.00075	0.00469	0.00018	0.00024
9	0.01151	0.00434	0.00017	0.00277	0.00142	0.00143	0.00002	0.00054	0.00003
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.00296	0.00083	0.00001	0.00034	0.00020	0.00021	0.00002	0.00003	0.00020
12	0.00096	0.0	0.0	0.0	0.00003	0.00004	0.0	0.00001	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.02070	0.00445	0.00021	0.00358	0.00028	0.00028	0.0	0.00009	0.00121
15	0.00642	0.00057	0.00008	0.00274	0.00055	0.00055	0.0	0.00010	0.00034
16	0.00067	0.00638	0.00005	0.00181	0.00048	0.00049	0.0	0.00019	0.00023
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.00406	0.00247	0.00003	0.00095	0.00128	0.00130	0.00005	0.00026	0.00508
19	0.02894	0.00004	0.0	0.00051	0.00069	0.00069	0.00006	0.00011	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.00009	0.00013	0.00010	0.00001	0.00016	0.00016	0.00022	0.00200	0.00078
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.00121	0.00241	0.00091	0.00050	0.00546	0.00546	0.00913	0.00402	0.00108
27	0.00228	0.00423	0.00026	0.00319	0.00132	0.00129	0.00031	0.00029	0.00711
28	0.00513	0.00958	0.00060	0.00723	0.00298	0.00293	0.00072	0.00067	0.01658
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.00765	0.00299	0.00020	0.00629	0.01390	0.01387	0.02652	0.00258	0.00431
35	0.0	0.0	0.0	0.0	0.00013	0.00013	0.0	0.0	0.0
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX V (Continued)

Industry	28	29	30	31	32	33	34	35	36
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.00072	0.0	0.0	0.0	0.0	0.00006	0.00001	0.0	0.00364
4	0.00030	0.0	0.00066	0.00001	0.00660	0.00668	0.00011	0.0	0.00013
5	0.00004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.00009	0.00025	0.00019	0.00001	0.00191	0.00172	0.00048	0.00007	0.00050
8	0.00024	0.0	0.00009	0.0	0.00044	0.00021	0.03386	0.00384	0.00518
9	0.00004	0.0	0.00006	0.00001	0.00690	0.00654	0.00114	0.0	0.00512
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.00020	0.00008	0.00009	0.00000	0.00035	0.00032	0.00024	0.00003	0.00010
12	0.0	0.0	0.0	0.0	0.00201	0.00186	0.0	0.00017	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.00123	0.00021	0.00017	0.00002	0.0	0.00015	0.00001	0.0	0.0
15	0.00035	0.0	0.0	0.0	0.00107	0.00089	0.00064	0.0	0.00003
16	0.00024	0.0	0.00002	0.0	0.0	0.00003	0.00167	0.0	0.00000
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.00520	0.00013	0.00023	0.0	0.00077	0.00093	0.00717	0.00015	0.00002
19	0.00001	0.0	0.0	0.0	0.01056	0.01009	0.00207	0.00320	0.00062
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.00077	0.00133	0.00134	0.00003	0.00045	0.00053	0.00003	0.00085	0.00097
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.00110	0.00548	0.00682	0.00002	0.01684	0.01183	0.00076	0.00309	0.00521
27	0.00726	0.00027	0.00022	0.00005	0.00109	0.00125	0.00034	0.00061	0.00058
28	0.01688	0.00045	0.00049	0.00002	0.00348	0.00287	0.00079	0.00144	0.00136
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.00439	0.00765	0.00766	0.00010	0.01000	0.00971	0.00343	0.01933	0.00604
35	0.0	0.00737	0.00737	0.0	0.0	0.00003	0.00025	0.05420	0.00015
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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