SIXTH DISTRICT MANUFACTURING INDEX

Technical Note and Statistical Supplement

FEDERAL RESERVE BANK OF ATLANTA
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SIXTH DISTRICT MANUFACTURING PRODUCTION INDEX:

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Federal Reserve Bank of Atlanta

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DISTRICT MANUFACTURING PRODUCTION INDEX

Technical Note and Statistical Supplement

This note consists of two major parts. Part I describes the concepts and methodology employed in constructing the new production index that was developed by the Research Department of the Federal Reserve Bank of Atlanta. Also included in Part I is a discussion of the empirical validity of the District production index. Part II contains, in time series form, indexes which are seasonally adjusted and unadjusted for individual industries and three major industrial groupings (i.e., durables, nondurables, and total manufacturing).

Section I - Introduction

Because of their unique participation in formulating national monetary policies, individual District Reserve Banks have been vitally interested in the development and compilation of various economic statistics germane to the study of their regions. The search for various comprehensive measurements that can be used as a broad foundation for regional economic analysis, such as one that reflects an up-to-date and reliable account of the current level of industrial and business activity, has been a perennial endeavor of District Reserve Banks. Currently, only the Reserve Banks of Boston and Dallas are releasing production indexes on a regular basis for either the District or for a state in the District.[1/] However, attempts have been made

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1/ "Electric Power - An Indicator of Industrial Activity," New England Business Review, Federal Reserve Bank of Boston, February 1965, pp. 8-13; C. Howard Davis, "Improvement of Texas Industrial Production Index," Business Review, Federal Reserve Bank of Dallas, September 1968, pp. 3-7.

by several other Banks to develop similar series.[2/]

At the Federal Reserve Bank of Atlanta, an interest in the development of a District production index began in the early 1960's when, as a part of a system-wide effort, the Bank began to collect statistics on kilowatt hours (KWH) of electricity sold to manufacturing by utilities. The project has been carried out under the general direction of Mr. Charles T. Taylor, Senior Vice President and Director of Research. Many of those on the Research staff have participated in the project, including Messrs. Phil Webster, Dale O'Bannon, William Schleicher, and Richard Long. The greatest momentum for the project was provided by Mr. Long, my immediate predecessor, during the period between 1966 and 1968.

Potential benefits that may be derived from the regional production index are substantial. First of all, the new District indexes will add another dimension to regional economic analysis by providing a reasonably reliable and up-to-date account of manufacturing activity at the regional level. Secondly, they will provide a statistical basis for analyzing and comparing interindustry as well as interregional manufacturing activity over a period of time, which will shed light on various forces that are relevant to the study of the growth process and cyclical phenomena observed

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[2/] See Business Indexes Proposed for the Fifth District (mimeograph), undated, Federal Reserve Bank of Richmond; "Toward an Index of Ninth District Industrial Production," Monthly Review, June 1966, Federal Reserve Bank of Minneapolis, pp. 3-7; "Electric Power Consumption in Manufacturing," Business Review, Federal Reserve Bank of Philadelphia, April 1961, pp. 24-26; "Electric Power as a Regional Economic Indicator," Economic Review, Federal Reserve Bank of Cleveland, September 1964, pp. 10-15; L. C. Anderson, "Value Added by Manufacture, Central Mississippi Valley Metro Areas, 1957-64," Review, Federal Reserve Bank of St. Louis, June 1964, pp. 5-10; "Electric Power Consumption - An Output Indicator in Milwaukee," Business Conditions, Federal Reserve Bank of Chicago, April 1962, pp. 5-11.

in a dynamic aspect of the regional economy. Thirdly, the indexes will satisfy, at least partially, the needs of private businesses and governmental agencies for regional production data in their decision making. It is vitally important that planners have knowledge concerning changes in the productivity factors, as well as in the level of physical output of individual industries--including the ensuing changes in the relative structure of the regional industries. For instance, an increasing number of individual companies study their own productivity estimate on a continuing basis in order to facilitate cost control and diversification planning, as well as for a variety of other reasons. The new District index will enable business to compare and analyze changes in their own productivity and level of output at the local level to those observed in the same industry of the District or national level.[3/]

Section II - Concept and Coverage

The District manufacturing production index is designed to measure monthly changes in the level of physical output of District manufacturing. The output, which is measured in constant dollars to remove the effects of price changes over a period of time, is statistically estimated from two major factor inputs, i.e., man-hours employed and KWH of electric power

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3/ For methods measuring the productivity of individual companies, see John W. Kendrick and Daniel Creamer, Measuring Company Productivity, National Industrial Conference Board, New York, 1965. Additional discussions on the usefulness of the production index are found in Clayton Gehman and Cornelia Metheral, Industrial Production Measurement in the United States: Concepts, Uses, and Compilation Practices, Board of Governors of the Federal Reserve System, Washington, February 1964.

consumed, for 18 out of 21 two-digit SIC industries.[4/] The estimates for individual industries are combined to yield indexes for two major industrial groups (i.e., durables and nondurables) and total manufacturing. The index covers, in its entirety, all six states wholly or partially served by the Federal Reserve Bank of Atlanta and is based on about 90 percent coverage of the reported universe of man-hour and electricity consumption data germane to the six states' industries. No attempt was made to incorporate actual output data into the index construction. The new index, as its title indicates, encompasses only the manufacturing sector and does not include utility and mining industries of the District states.

While it is ideal to make a monthly measurement of production output by tabulating the actual quantity of goods produced in an industry, it is neither practical nor the most efficient method to accomplish the objective. First, there is a question whether many manufacturing concerns keep actual and reliable production data on a monthly basis. Even if all of them did, there still would be the formidable problem of collecting data directly from individual companies every month, even by sampling methods. Aggregating individual product data in a meaningful way would be an equally formidable problem because products are numerous and are not homogeneous in character.

The theoretical production function provided the conceptual cornerstone

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[4/] For the time being, production indexes for three industries (SIC 19, Ordnance and Accessories, SIC 38, Professional, Scientific, and Controlling Instruments; and SIC 39, Misscellaneous Manufacturing Industries) were not estimated primarily because of incompleteness in published man-hour and value added data and because of their relative insignificance in the overall manufacturing endeavor of the District.

in the development of the District's production index.[5/] More specifically, the new index has been developed on the assumption that the functional relationship between the rate of change in input factors and the rate of flow of physical output per time period can be statistically defined. Once the relationship is defined, the change in the level of output may be estimated by the changes in quantity of the input factors. The independent variables employed as the input factors of production are data on man-hours employed and industrial use of electric power; both are generally available at state levels for 2 digit SIC industries on a relatively current basis. Industrial output in constant dollars was approximated by deflating the value added data with the price index of the base year period. Since value added data are not available on a current basis, current outputs were estimated by extrapolating factor productivities along with the input variables. The output estimate was then carried forward monthly until the census data became available, at which time output estimates made by the extrapolated factor productivities were adjusted to the new bench marks. Estimating procedures and the primary data employed in the derivation of the index are further elaborated in later sections of this note.

[5/] The input and output relationship in an aggregate production function encompassing the entire industry designated by the two digit SIC level is admittedly complex and poses difficult problems in the theoretical as well as empirical frame of reference. In this context, it must be emphasized that the theoretical production function provided only the conceptual guidance for the methodological frame of reference. For discussions on broad problems associated with the aggregate production function, see Franklin M. Fisher, "The Existence of Aggregate Production Function," Econometrica, Vol. 37, 1969, pp. 553-577; and Robert M. Solow, "Some Recent Developments in the Theory of Production," in Murray Brown, Ed., The Theory and Empirical Analysis of Production, National Bureau of Economic Research, New York, 1967, pp. 25-53. See also, Franklin M. Fisher, "Embodied Technology and the Existence of Labour and Output Aggregated," Review of Economic Studies, Vol. 35, 1968, pp. 391-412.

The use of the productivity extrapolators for this purpose, which will be discussed further in Section V, may not be empirically valid under certain circumstances, and thus, the extrapolators may distort estimates of current outputs.[6/] However, experience seems to indicate that the productivity extrapolator generally yielded fairly reliable estimates in the past.[7/]

The use of the two factors of production as primary input variables is based on conceptual as well as practical considerations. Typically, the effects that changes in the quantity of the input factors have upon volume of output over a period of time are manifested through either "scale effect" or "technological effect," or through both. In other words, changes in physical output are affected not only by changes in the quantity of the input factors but also by changes in the technological parameters of the production function, which in turn are affected by changes in the factor productivities and the marginal rates of technical substitution of the two factors. While it is almost a formidable task to isolate empirically the magnitude of output variations stemming from these two "effects" individually or jointly, it was felt that a combination of the two input variables in the

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6/ For instance, Hultgren and Kuh showed that changes in labor productivity tend to move in the same direction as changes in firms' output during the business cycle period. See for instance, Thor Hultgren, Changes in Labor Cost During Cycles in Production and Business, National Bureau of Economic Research, New York, 1960, Chapter 2; and Edwin Kuh, Profits, Profits Markups, and Productivity, Joint Economic Committee, 86th Congress, Government Printing Office, 1960, pp. 61-111; Board of Governors of the Federal Reserve System, Industrial Production, 1959 Revision, Washington, 1960, pp. 22-24.

7/ James W. Knowles, "An Appraisal of Productivity Projections," Journal of American Statistical Association, June 1959, as quoted in John W. Kendrick, Productivity Trends in the United States, Princeton University Press, Princeton, 1961, page 16.

same equation would reflect interaction effects that could not be shown through the use of either man-hour or KWH data alone. For instance, a more intensive use of capital is likely to be accompanied by increased use of electricity and a decrease in demand for labor. Over a period of time, however, the ratio between inputs of labor and KWH changes as a result of changes in the parameters of the production function, such as, changes in technology and work efficiency. Our experience indicates that the direction of change in the input ratio, as well as change in relative use of electric power to labor (as measured by KWH used per man-hour over a period of time), would not always show stable and predictable relationships. Furthermore, a number of recent studies indicated that the elasticity of factor substitution for most U. S. manufacturing industries is close to unity.[8/] For this reason, in the construction of the new District index, it was assumed that the two input factors used had unitary elasticity of substitution.

Except for the actual physical output data, which are not incorporated in the new District index, the District production index shares a basic affinity with the U. S. production index in its conceptual and methodological orientation. Like the U. S. production index, the new District index is

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8/ See for instance, Paul Zarembka, "On the Empirical Relevance of the CES Production Function," Review of Economics and Statistics, Vol. LII, February 1970, pp. 47-53; C. A. Knox Lovell, "Biased Technical Change and Factor Shares in the U. S. Manufacturing," Quarterly Review of Economics and Business, Vol. 9, Autumn 1969, pp. 17-33; and Phoebus J. Dhrymes and Paul Zarembka, "Elasticities of Substitution for Two-Digit Manufacturing Industries: A Correction," Review of Economics and Statistics, Vol. LII, February 1970, pp. 115-117. For a discussion on recent developments in the CES production function see, Marc Nerlove, "Recent Empirical Studies of the CES and Related Production Functions" in Brown, ibid., pp. 56-112, and articles presented in a symposium on CES production functions in Review of Economics and Statistics, Vol. 50, 1968, pp. 443-479.

designed on the basis of what is known as the Census "value added" concept. Value added by manufactures, as it is defined by the U. S. Bureau of Census, "is derived by subtracting the total cost of materials from the value of shipments and other receipts and adjusting the resulting amount by the net change in finished products and work-in-process inventories between the beginning and end of the year."[9/] The value added by manufactures is generally considered to be the best empirical value measure of net output produced by individual industries. As such, it can be used to reflect an approximation of the net production of individual industries, and when aggregated for the entire District region, it can be regarded as reflecting an approximation of gross product originating in the District manufacturing sector.[10/] The affinity of the concept will enhance the comparability of the U. S. data to the regional data, or vise versa, for various economic analysis.

Section III - Estimating Equations and Procedures

After considerable experimentation with various alternative approaches and formulas used by some Federal Reserve Banks and proposed by others,[11/]

[9/] U. S. Bureau of Census, Census of Manufactures 1963, Vol. I, page 22.

[10/] For a detailed explanation on concepts employed in the construction of the U. S. production index, see Gehman and Metheral, ibid., pp. 1-2.

[11/] Various alternative approaches and formulas considered include: Publications cited in footnote 2 of this note, page 2; Technical Supplement to "Measuring New England's Manufacturing Production" (mimeograph), and Edwin F. Estle and Jerilyn Fair, Technical Supplement to "Electric Power - An Indicator of Industrial Activity" (mimeograph), 1965, all of which were published by the Federal Reserve Bank of Boston; Richard Long, Measuring Regional Production, a proposal, undated, Federal Reserve Bank of Atlanta; Carl W. Hale, Methodology of the Texas Industrial Production Index, 1966, revision (mimeograph), July 1966, Federal Reserve Bank of Dallas. One of the more comprehensive studies on the development of a regional production on micro-approach may be found in T. Y. Shen, A Regional Production Index for New England (mimeograph), Federal Reserve Bank of Boston, Boston, 1960.

the following formulas and approaches were employed to estimate output for individual two-digit SIC industries in the District.

$$Q_{it} = W^a_i \left(\frac{A}{g_i}\right) + W^b_i \left(\frac{B}{h_i}\right) \quad \text{.....(1)}$$

$$\text{Where } A = L_{it} \cdot \frac{V_{iy}}{L^*_{iy}}$$

$$B = E_{it} \cdot \frac{V_{iy}}{E^*_{iy}}$$

$$Q'_{it} = W^a_i \left(\frac{A'}{g_i}\right) + W^b_i \left(\frac{B'}{h_i}\right) \quad \text{.....(2)}$$

$$\text{Where } A' = L_{it} \cdot \frac{V_{i.1966}}{L^*_{i.1966}} \cdot [1 + (u_i \cdot n)]$$

$$B' = E_{it} \cdot \frac{V_{i.1966}}{E^*_{i.1966}} \cdot [1 + (v_i \cdot n)]$$

Where Q = output index

W^a = weight for man-hour index
L = monthly man-hour input
V = value added deflated by wholesale price index

W^b = weight for KWH index
E = KWH of electric power input

L^* = annual average of man-hour input

E^* = annual average of KWH input
g = 1957-59 average of A series
h = 1957-59 average of B series
u = monthly increment factor of labor productivity determined by trend

v = monthly increment factor of KWH productivity determined by trend
i = industry
t = month
n = number of months counted consecutively by treating January 1967 to equal one
y = year

(NOTE: Subscripts, 1966, in A' and B' denote the year for which the latest Census data are available. As more current Census data become available, the subscript should be changed.)

Equation (1) was used to obtain monthly production indexes of individual industries for the period between January 1960 and December 1966, while equation (2) was employed in deriving monthly indexes for January 1967 and thereafter.

The two equations are basically the same except that A and B (i.e., output estimates made by man-hour and KWH inputs independently) in equation (1) were obtained by the respective annual productivity factors derived from the census annual value added and man-hour data, whereas A' and B' in equation (2) were obtained by the productivity factors that were extrapolated largely on the basis of past trends. The productivity extrapolators, i.e., u_i and v_i, used are shown in Appendix A, Table 1.

A couple of minor modifications were necessary in the actual operations of the two basic formulas; namely, modifying the $(\frac{A}{g})$, $(\frac{B}{h})$, $(\frac{A'}{g})$, or $(\frac{B'}{h})$ series to a six-month or three-month moving average series for several industries before they were combined to yield an industry production index, and use of only the $(\frac{A}{g})$, $(\frac{B}{h})$, $(\frac{A'}{g})$, or $(\frac{B'}{h})$ series because of input data problems for three particular industries. Types of specific variables used to derive the production index for an industry are shown in Appendix A, Table 2.

The estimation of the production index of individual industries for current month involves the following steps:

(1) estimation of output by man-hour input, i.e., A' series
(2) estimation of output by KWH input, i.e., B' series
(3) transformation of A' and B' series into an index expressed in terms of the 1957-59 average

(4) summation of the two indexes, i.e., summation of $(\frac{A'}{g_i})$ and $(\frac{B'}{h_i})$ with appropriate weights used, that is W^a_i and W^b_i. These weights are explained in the next Section.

The monthly production index derived from step 4 above is seasonally adjusted by the application of the Census X-11 seasonal adjustment program. Once the individual indexes are seasonally adjusted, no further seasonal adjustments were made in deriving the aggregate indexes of durable, nondurable, and total manufacturing. The seasonally adjusted aggregate indexes were obtained by summing the seasonally adjusted component indexes with industry weights. In formula:

$$Q''_t = \Sigma W^*_i Q_{it} \quad \text{.....(3)}$$

Where Q'' denotes an aggregate index

W^* represents weights to individual indexes, which are expressed in fractions

i and t represent industry and month, respectively

The industry weights used to obtain the aggregate indexes were derived from value added data of individual industries for 1963 to reflect the relative importance of an industry within the three specific groups. The industry

weights used are shown in Appendix A, Table 3.

Section IV - Characteristics of the Estimating Equations

The two basic formulas employed to derive the new District production index meet the tests of relative simplicity and economy, of consistency, and of uniformity. They are also, as pointed out earlier, compatible with the U. S. production indexes.

First, as noted in the preceeding section, the estimation of monthly output for individual industries involves 4 relatively simple steps, which do not require extensive clerical work in collecting and processing primary input data. Moreover, the operating procedure involved is uncomplicated so that overall cost necessary for computing and maintaining monthly indexes on a continuing basis will be minimal whether actual computational works are carried out by clerks or by computers. As long as the formulas and variables used yield reasonably meaningful empirical measurements of regional production, the overall cost should be balanced and optimized in the light of potential benefits derived from the use of the data. Secondly, the basic methodological framework is sufficiently consistent, not only with the theoretical production function but with the empirical relationship generally observed between certain key inputs and physical output. As will be discussed later, the formulas are capable of yielding estimated output indexes which are sufficiently reflective of changes in demand for input factors even when the practice of labor hoarding is prevalent. Finally, the estimating equations, as well as variables used, meet the test of uniformity in that indexes for 18 individual industries were derived from a single basic formula,

i.e., equation (2), with the use of the original regional data. All of the raw input variables used for the index derivation are original data applicable to the region, in contrast with data that can be derived from secondary sources, such as, deriving regional data by statistical decomposition of the national data. The use of original data as raw input has its own drawbacks, such as the occasional needs for estimating certain data at the state level, which were withheld in Census publications to preserve the confidentiality of individual firms. But, as compared with the use of secondary data derived from the national data, the use of the regional data permits ease in tracing the probable source of errors made not only in the computational stage but also those errors frequently made in the initial data collection and processing stages. A specific advantage of relying exclusively on the original data is that this allows better control in processing the input variables and eliminates needs for revising the District indexes each time any part of the national data is revised.

In addition to these general characteristics, there are two specific structural characteristics embodied in the estimating equations. The first of these characteristics is that the equations are designed to yield output estimates which produce the least statistical distortion when the estimates are indexed based on the 1957-59 average. As will be pointed out later, some of the District input variables used were partially estimated, and the estimating equations were designed to keep the probable effects of the estimated variables at a minimum; because denominators "g" and "h" (that is, the 1957-59 averages for "A" and "B" series) are by design, in fact, averages of value

added for the 1957-59 period for individual industries. Thus, if man-hour inputs used for 1957, 1958, or 1959 were the variables estimated, the effects of the man-hour estimates will not affect the index series, since the man-hour input will be cancelled out by the denominator used for the industry's man-hour productivity for the year. This consideration is rather crucial in view of the fact that as we go back to the earlier years, the regional statistics available for many industries become pregressively more scarce. Moreover, we wanted to incorporate the industrial use of electric power, but data for electric power consumption by industry were not available prior to 1960 for the District states and prior to 1962 for the U. S. However, the cancelling feature of the estimating equations described above enabled us to arrive at the KWH index for individual industries on the basis of the appropriate 1957-59 average, as the yearly KWH data estimated for the 1957-59 period were cancelled out by the same data used to obtain the annual KWH productivity, leaving the value added data for the base year period intact.

The second specific structural characteristic of the estimating equation is that they were designed to reflect composite effects on outputs arising from changes in the scale as well as the technology of production over a period of time. It is true that the composite effects are statistically impregnated in the productivity of the individual input factors, since the productivity used for current measurements of output is derived by extrapolation. However, as an added built-in feature to make the index series more responsive to changes in the input mix as well as to periodic changes in relative importance of individual factors, the man-hour and KWH index series are derived

independently, but are combined in weighted form to yield an industry index. (Weights used are shown in Appendix A, Table 4.) The weights used were based on labor and capital coefficients derived from the Cobb-Douglas production functions computed for individual industries from 1963 man-hour and capital data.[12/]

In addition to its conceptual merits for a long-run consideration, concurrent use of man-hour and KWH in the same formula enhances empirical reliability of the index for the short run as well, because it increases the sensitivity of the index to reflect concurrent changes taking place in the production activity of industries. As discussed below, changes in KWH consumption are a better barometer of changes in demand for energy in many instances than changes in demand for labor reflected in man-hour data. Thus, use of two independent variables (i.e., man-hour and KWH indexes) in the same formula, in addition to making the output index more responsive to changes in demand for inputs of both factors, tend to minimize possible distorting effects attributable to certain flaws residing in man-hour data used. (Some of these flaws will be discussed in the next Section.) For one thing, monthly KWH data represent total electric energy consumed by industry during the entire month. Thus, with the exception of a certain fixed amount of

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12/ An estimation of capital stock for the District manufacturing industries has been made by this Bank as a separate staff research project which is still in progress. The principal methodology used for the estimation relied heavily on one developed by Gallaway. Cf. Lowell E. Gallaway, "Regional Capital Estimates by Industry, 1954-57," Southern Economic Journal, Vol. XXIX, July 1962, pp. 21-25. Weights used for individual series were not revised for the entire time span of index coverage, but are scheduled to be reviewed and revised when the next Census of Manufactures becomes available, at which time all index series for 1967 and onward will be bench mark adjusted.

electric power used by industries for such overhead operations as lighting, space heating, or cooling, KWH consumed closely approximate the actual amount of electric energy used for production of firms' output. Furthermore, KWH data readily reflects electric energy consumed by new establishments as well as discontinuation of power use by defunct firms.

Section V - Data Sources and Limitations

Annual value added and man-hour data by industry up to the years prior to 1967 were obtained from the Census of Manufactures for census years and from the Annual Survey of Manufactures for interim Census years. Monthly man-hour data for the years prior to 1968 were obtained from the Employment and Earning Statistics for the U. S., 1909-68, (U. S. Bureau of Labor Statistics, Bulletin No. 1312-6, 1968) and monthly man-hour data after 1968 were obtained from individual state labor departments in cooperation with the U. S. Bureau of Labor Statistics.

Some of the data limitations which should be recognized for man-hour statistics are: First, they do not possess a high degree of sensitivity in reflecting changes in demand for labor because of a certain rigidity in downward adjustment of work hours. For instance, during the beginning phase of business fluctuations, employers do not always lay off workers simply because demand for their products has slackened. This is particularly true when a business slowdown is expected to be brief in duration. Moreover, for certain processing industries in which production methods are highly automated and mechanized, such as chemical and petroleum industries, man-hour data are

generally considered as a poor proxy for estimating physical output.[13/] More importantly, monthly employment data, upon which man-hour data are based, do not represent a whole month but cover only a single survey week which includes the 12th day of the month. Also, man-hour data represent man-hour paid by employers rather than actual man-hours worked in plant for production. This tends to distort actual amount of labor put into production, especially during those months when many workers are away from a plant on vacation. Finally, it should be emphasized that monthly man-hour data used were not derived from well-controlled random samples. They were derived by the so called "cutoff" sample method. Under this method, tabulation of sample data are made until reports from a certain percentage of the sample firms have been received by the state labor departments. Consequently, the probability errors associated with sample procedures in data collection cannot be statistically determined and corrected.

The KWH data that were utilized came from those collected and maintained by the Bank and the Board of Governors of the Federal Reserve System. While, as noted earlier, these data are fairly comprehensive and timely, they are not entirely free of structural defects. Wherever practical, efforts were made to negate potential effects of the data deficiencies.

First, because of the cycle-billing method used by utility companies,

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[13/] Experience of the Federal Reserve Bank of Dallas in the construction of the Texas production index shows that man-hour data cannot be relied on for chemical and petroleum industries, Minutes of the Workshop on Local Production Indexes, (the conference was held at the Federal Reserve Bank of Cleveland on April 1964), Federal Reserve System, page 2.

monthly KWH data as reported may or may not coincide with the actual month for which the data represent. As an attempt to minimize this distortion, practically all of the KWH indexes were adjusted using either a six-month or a three-month moving average. Secondly, the consumption of electric power displays strong seasonal variations which are generally believed to be caused by widespread use of electricity for space heating and cooling. However, possible distortions arising from this source are also believed to have been substantially corrected by the seasonal adjustments applied to the KWH indexes, i.e., the $(\frac{B}{h_i})$ or $(\frac{B'}{h_i})$ series.[14/] Thirdly, it should be recognized that for certain industries that rely heavily on energy other than electric power, KWH data may not have reliable empirical content as a major input factor. No attempts were made to correct this particular situation.[15/]

There is an inherent difficulty in using regional data published in Census data. First, certain information was withheld from publication because of disclosure provisions. Those data withheld which were essential to the construction of the District index were estimated, while those that were relatively insignificant for our purpose were ignored. Secondly, state data published in the Annual Survey of Manufactures are subject to

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14/ The KWH data used were not adjusted for working days due to a practical difficulty involved in ascertaining the correct working days for six different states.

15/ Since only KWH data and man-hour data are used as proxy measures of output, the relative weights assigned to the two individual input series may have been distorted for those industries that rely heavily on energy sources other than electric power.

sampling errors. Firms in the sample, as well as the sample size, vary from one year to another, and the Bureau of Census does not revise bench mark data for states once the data are published in the Annual Survey of Manufactures. Thus, the District data compiled from the Annual Survey and certain computations derived from the data may not have the same accuracy as the similar data for the nation as a whole. As shown in Appendix A, Table 5, regression coefficients of annual man-hour productivity were lower for the District industries than for their national counterparts while the standard deviations were higher for the District industries than for the same industries in the U. S. However, complete bench mark revisions in the District index can be made when a comprehensive Census of Manufacture is made available. Despite incomplete nature of data published in Annual Survey of Manufactures, an annual bench mark revision may need to be made for interim Census years on the basis of the value added data published in the annual publication.

Price data used to deflate value added figures were wholesale price indexes applicable to two-digit or three-digit industry levels. Several deficiencies in the use of price information should be pointed out. First, since no regional wholesale price data were available, the deflators used were the national data, compiled by the U. S. Bureau of Labor Statistics (BLS). Secondly, this deflation process differs from the so called "double deflation" method, generally used when separate price data for input factors and outputs are available. Under the double deflation method, values of inputs and outputs are deflated separately to obtain value added by appropriate

price indexes applicable to either inputs or outputs.[16/] Thirdly, the BLS uses the 1958 weights beginning in 1961 and the 1954 weights for 1958 through 1960. Since no adjustment could be made for the shifting in the BLS weighting period, there is a slight possibility that some errors may have developed during our process of price deflation. If this were the case, the estimates of the productivities of man-hour and KWH which had been computed from the deflated value added might have been distorted.

As shown in Section II of this note, the input productivity factor used for monthly indexes of January 1967 up to the present were extrapolated on the basis of historical trends of the respective productivity factors. It should be pointed out that productivity factors so calculated in many cases may not reflect an accurate picture of concomitant productivity changes in certain industries. For instance, they tend to underestimate current productivity for those industries where labor productivity has been rising rapidly, such as the machinery industry. On the other hand, they tend to overestimate the current productivity for those industries whose productivities grow slowly or are not growing at all. Various empirical studies showed that changes occurring in labor productivity were quite sensitive to the business cycle, and changes in output per man-hour and those in the level of output in many industries were positively related.[17/] A couple of alternative approaches to overcome

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[16/] A useful discussion on this point may be found in Paul A. David, "The Deflation of Value Added," Review of Economics and Statistics, Vol. 44, 1962, pp. 148-155.

[17/] See on this point, Hultgren, ibid., Chapter 2 and Kuh, ibid. See also Thomas A. Wilson and Otto Eckstein, "Short-run Productivity Behavior in U. S. Manufacturing," Review of Economics and Statistics, Vol. 46, 1964, pp. 41-54, and T. Y. Shen, "Innovation, Diffusion, and Productivity Changes," Review of Economics and Statistics, Vol. 43, 1961, pp. 175-181. For a useful discussion on how man-hour productivity behaved for the postwar period and on the factor affected the productivity change, see Trend in Output Per Man-hour in the Private Economy, 1909-1958, Bulletin No. 1249, U. S. Bureau of Labor Statistics, December 1959.

problems in using the productivity extrapolator have been suggested; however, data problems encountered at the regional level have precluded the application of the alternative approaches in the derivation of District indexes.[18/] In this respect, for certain industries that are vulnerable to cyclical swings, such as the primary metals industry, use of the productivity extrapolator as the current productivity factor may have a strong tendency to distort the true picture of productivity changes during cyclical fluctuations.

Another potential source of distortion that may have affected the size of the productivity extrapolators was the application of a single extrapolator to broad industrial groupings designated by two-digit SIC. There is no doubt that the empirical reliability of the index would have been enhanced if the productivity extrapolators had been computed and applied to a three-digit SIC industry basis.

Another limitation inherent in the new District indexes is that they are incapable of reflecting inventory change and shipment situation. Therefore, if it is assumed that no stable functional relationship existed between production and shipment over a long period of time, the validity of the new District index is weakened, particularly, the usefulness of the indexes as empirical measurements to reflect business cycle phenomena.

Section VI - Empirical Validity of District Production Index

Discussion will now be focused on the attempt made to assess the empirical

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18/ Hultgren suggested the use of man-hour and payroll indexes divided by the index of quantity of output sold, and Shen suggested the estimation of value added and productivity on the basis of the estimation of cross section parameters. See Thor Hultgren, Cost, Prices, and Profits: Their Cycle Relations, National Bureau of Economic Research, New York, 1965, pp. 13-36, and T. Y. Shen, ibid., (A Regional Production Index for New England), page 6.

reliability of District production index. Since data on actual outputs by District industries are not available, it is impossible to apply direct tests on the District indexes which are, in fact, the summary measures derived from the use of the estimating formulas and statistical procedures. Consequently, only indirect tests can be made to determine whether the behavioral patterns of computed District indexes have reasonably reliable empirical contents as individual component series or as an aggregate series, such as the total manufacturing index. Two indirect methods were employed in the present investigation.

The first method relied on a detailed analysis of graphical, behavioral patterns of the District's individual industry index series. The individual industry series were first examined for their seasonal patterns, general trend behavior, and obvious erratic movements. Then, they were compared with the comparable U. S. production index series to study their relative behavioral patterns. More specifically, the behavior of each District index and its U. S. counterpart is analyzed to detect conformity, or lack of it, between them in the timing of the series' turning points, as well as in the direction and slope of the series' movements. In general, except for a few isolated incidences where divergences observed between District and U. S. indexes series could not be satisfactorily accounted for, the District production indexes, both as individual components and as an aggregate series, appeared to be reasonably reliable summary measures which reflect changes in the level of physical outputs by individual industries.

The other method employed as the indirect test was to measure quantitatively the relative performance of the District production indexes. One

possible way of accomplishing this test is by applying statistical measures to joint distributions of two sample universes that are delineated by common denominators. The testing procedure that was devised, related the distribution of annual production index ratios for the District and U. S. to the distribution of annual employment index ratios for the District and U. S. for each industry. In order to standardize the variables, the employment data were indexed in relation to the 1957-59 average. District variables for each given year were then expressed in relation to the value of the U. S. variables. Consequently, since the ratio variables used for testing were ones jointly determined by the relevant District and U. S. variables, they will reflect changes observed both within and between time periods. As will be seen shortly, this simple procedure permits the formulation and testing of an hypothesis which is more meaningful than mere descriptive measures, such as means and standard deviations.

One important assumption underlying the testing procedure is that for each industry in any given year, the variances observed between District and U. S. employment are equal to the variances observed between District and U. S. production indexes. That is, for a given industry, the parameters for the production functions of the District and the U. S. are the same. Another important assumption is that all variables used in computing the annual ratios for the two sample universes are accurate and empirically reliable, except for the District production indexes. If these two assumptions hold true, the variances observed in the District production index in relation to the U. S. index will be equal to the variances observed in the District employment index

in relation to the U. S. index for the same industry.

To illustrate the procedures used, two sets of ratio variables were obtained individually for nine major industries in the District. The combined value added for these industries accounts for almost two-thirds of the total value added for the District's entire manufacturing. Each ratio variable covered a nine-year period from 1960 through 1968. The first set of ratio variables was computed by dividing the annual District production index for an industry by the U. S. production index for the same industry. The second set of ratio variables was obtained by dividing the annual District employment index for an industry by the U. S. employment index for the same industry. Then, arithmetic means and standard deviations were computed for each set, and they were compared with each other on an industry basis. The same procedure was followed for total manufacturing. Results of the computations are shown in Appendix A, Table 6.

A close examination of the table indicates that generally the sample means of production indexes are very similar to those of the employment indexes. In order to tests the statistical significance of differences observed between the two sample means, tests were made on the hypothesis that $u_1 = u_2$; that is, there is no difference between the two means. On the basis of this testing, the hypothesis for all of the nine selected industries, except three (i.e., textiles, lumber and wood, and paper), was accepted at the 5-percent level of significance.

At this point, it should be emphasized that the rejection of the hypothesis for three industries does not necessarily indicate flaws in their production

indexes. When considering the assumption underlying the test (i.e., there is no difference in the parameters of the production functions between the District and U. S. for the same industry), the rejection of the hypothesis for certain industries was not unexpected. In this respect, the rejection of the hypothesis for these three industries actually enhances the empirical validity of their District indexes; because in these industries, the District has the relative comparative advantage over other regions in its inter-regional trade. As such, productivity of these industries in the District has usually been higher than that of its U. S. counterparts. For instance, in 1966, the value of shipments per man-hour for the District's paper industry was $22.36, as compared with $18.98 for the U. S. paper industry as a whole.19/

When considering that errors can be accumulated in the individual District production indexes under the methodology used in the index derivation (i.e., continuous application of monthly productivity extrapolators used in the District indexes), and when considering the potential problems presented by various limitations of the regional data employed, the results of the statistical testing seem to validate the empirical contents of the new District production indexes even more than the investigator had hoped.

19/ See C. S. Pyun, "The Southeast's Booming Paper Industry," Monthly Review, Federal Reserve Bank of Atlanta, September 1969, page 111.

APPENDIX A, Table 1. PRODUCTIVITY EXTRAPOLATORS

Industry	Man-hour		KWH	
	Productivity 1966	Monthly Increment Factor	Productivity 1966	Monthly Increment Factor
Food (20)	257.34	.0020295	.804	-.0014057
Tobacco (21)	213.26	.0021665	3.260	-.0074888
Textiles (22)	202.37	.0046460	.320	.0018950
Apparel (23)	123.95	.0020077	2.970	-.0051686
Lumber and Wood (24)	127.71	.0049868	.690	-.0026000
Furniture and Fixtures (25)	165.45	.0016378	1.440	-.0065684
Paper (26)	400.08	.0024894	.127	.0001890
Printing and Publishing (27)	254.87	.0013271	2.080	-.0064099
Chemicals (28)	551.42	.0058098	.144	.0003350
Petroleum (29)			.276	-.0002200
Rubber (30)	606.45	.0052336		
Leather (31)	183.15	.0012136		
Stone, Clay, and Glass (32)	251.33	.0014557		
Primary Metals (33)	367.84	.0036993	.070	.0046950
Fabricated Metals (34)	241.25	.0016778		
Non-Electrical Machinery (35)	257.73	.0006519	1.580	-.0016623
Electrical Machinery (36)	399.50	.0064015	.730	.0045170
Transportation Equipment (37)	293.18	.0027751	1.530	.0050990

APPENDIX A

Table 2.

INDUSTRY INDEX DERIVATION

Industry	Component and Type of Variable Used
Food (20)	Man-hour and KWH**
Tobacco (21)	Man-hour* only
Textiles (22)	Man-hour and KWH**
Apparel (23)	Man-hour and KWH**
Lumber and Wood (24)	Man-hour and KWH**
Furniture and Fixtures (25)	Man-hour and KWH**
Paper (26)	Man-hour and KWH**
Printing and Publishing (27)	Man-hour and KWH**
Chemicals (28)	Man-hour and KWH**
Petroleum (29)	KWH* only
Rubber (30)	Man-hour and KWH**
Leather (31)	Man-hour* only
Stone, Clay, and Glass (32)	Man-hour only
Primary Metals (33)	Man-hour and KWH*
Fabricated Metals (34)	Man-hour* only
Nonelectrical Machinery (35)	Man-hour and KWH
Electrical Machinery (36)	Man-hour and KWH
Transportation Equipment (37)	Man-hour* and KWH

NOTE: Components with one asterisk (*) means that they were adjusted on a three-month moving average and components with two asterisks (**) represent those series adjusted on a six-month moving average. Components with no asterisk means that they were used in their original form with no moving average applied.

APPENDIX A

Table 3.

VALUE ADDED BY MANUFACTURE, 1963

District States

Industry	Value Added ($000)	Percent Distribution
Total Manufacturing	13,871,153	100.00
Food (20)	1,993,253	14.37
Tobacco (21)	66,703	0.48
Textiles (22)	1,070,613	7.72
Apparel (23)	952,616	6.87
Lumber and Wood (24)	571,356	4.12
Furniture and Fixtures (25)	285,504	2.06
Paper (26)	1,122,583	8.09
Printing and Publishing (27)	516,991	3.73
Chemicals (28)	2,149,584	15.50
Petroleum (29)	330,999	2.38
Rubber (30)	291,133	2.10
Leather (31)	163,297	1.18
Stone, Clay, and Glass (32)	672,145	4.84
Primary Metals (33)	1,007,192	7.26
Fabricated Metals (34)	652,016	4.70
Nonelectrical Machinery (35)	422,151	3.04
Electrical Machinery (36)	546,448	3.94
Transportation Equipment (37)	1,056,569	7.62

Source: U. S. Bureau of Census, Census of Manufactures, 1963.

APPENDIX A

Table 4.

FACTOR WEIGHTS, 1963

Industry	Man-hour Weight	KWH Weight
Food (20)	.2132	.7868
Tobacco (21)	.2900*	.7100*
Textiles (22)	.4682	.5318
Apparel (23)	.4740	.5260
Lumber and Wood (24)	.4763	.5237
Furniture and Fixtures (25)	.4323	.5677
Paper (26)	.3095	.6905
Printing and Publishing (27)	.3202	.6798
Chemicals (28)	.1751	.8249
Petroleum (29)	.1867*	.8133*
Rubber (30)	.3179	.6821
Leather (31)	.4156*	.5844*
Stone, Clay, and Glass (32)	.2904*	.7096*
Primary Metals (33)	.3189	.6811
Fabricated Metals (34)	.3747*	.6253*
Nonelectrical Machinery (35)	.3685	.6315
Electrical Machinery (36)	.2673	.7327
Transportation Equipment (37)	.3603	.6397

*These weights were not used in computing production indexes for the indicated industries because only a single input series (i.e., either man-hour or KWH input series) was used in the index derivation for these industries. See Appendix A, Table 2, page 27 from the specific input series used.

APPENDIX A, Table 5. LINEAR REGRESSION OF ANNUAL MAN-HOUR PRODUCTIVITY, 1957-65

($y = a + bx$ y = annual man-hour productivity; $x = n$; $x_o = 1956$)

Industry	District			U. S.		
	Regression Coefficient	Coefficient of Correlation	Standard Error of Estimate	Regression Coefficient	Coefficient of Correlation	Standard Error of Estimate
Food (20)	7.73	.952	6.426	11.02	.980	5.787
Tobacco (21)	2.92	.256	28.455	20.94	.990	7.832
Textiles (22)	8.93	.985	4.024	7.84	.990	2.872
Apparel (23)	4.72	.889	6.278	4.27	.914	4.877
Lumber and Wood (24)	4.84	.877	6.861	6.07	.968	4.038
Furniture and Fixtures (25)	4.07	.806	7.714	3.60	.939	3.413
Paper (26)	13.39	.958	10.398	8.52	.989	3.242
Printing and Publishing (27)	3.82	.728	9.297	6.63	.987	2.810
Chemicals (28)	25.00	.940	23.501	23.77	.982	11.688
Petroleum (29)	29.53	.768	63.498	34.30	.967	23.207
Rubber (30)	13.27	.740	31.152	9.87	.989	3.764
Leather (31)	1.32	.307	10.518	2.22	.761	4.896
Stone, Clay, and Glass (32)	11.52	.879	16.143	9.46	.938	9.045
Primary Metals (33)	13.02	.851	20.739	8.82	.953	7.226
Fabricated Metals (34)	4.63	.921	5.061	5.56	.971	3.558
Machinery (35)	14.19	.890	18.759	9.41	.956	7.454
Electrical Machinery (36)	11.10	.930	11.292	15.48	.977	8.767
Transportation Equipment (37)	12.35	.846	20.079	15.94	.990	5.779

NOTE: Value of regression coefficients for both the District and the U. S. are large because annual man-hour productivity data regressed were obtained by using annual average man-hour data.

APPENDIX A, Table 6. RELATIVE PERFORMANCE OF DISTRICT PRODUCTION INDEXES FOR SELECTED INDUSTRIES

Industry	Ratio of District Production Index to U. S. Production Index		Ratio of District Employment Index to U. S. Employment Index		Computed t Value*
	Mean	Standard Deviation	Mean	Standard Deviation	
Food (20)	1.0763	.0305	1.0920	.0397	.8870
Textiles (22)	1.2122	.1111	1.0359	.0194	4.4185
Apparel (23)	1.3242	.1707	1.2980	.1326	.3429
Lumber and Wood (24)	1.0990	.0959	.9852	.0145	3.3178
Paper (26)	1.0764	.0149	.9834	.0260	8.7736
Chemicals (28)	1.0430	.0422	1.0279	.0379	.7550
Stone, Clay, and Glass (32)	1.0561	.1389	1.0992	.0551	.8163
Fabricated Metals (34)	1.1551	.0971	1.1610	.0942	.1234
Transportation Equipment (37)	1.2984	.2945	1.3429	.2118	.3468
Total Manufacturing	1.1403	.0880	1.1108	.0578	.7930

* - t with 16 degrees of freedom at the .05 level is 2.12.

APPENDIX B

PRODUCTION INDEX
SIXTH FEDERAL RESERVE DISTRICT STATES
SIC 20 - FOOD AND KINDRED PRODUCTS
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						110.7	112.6	111.9	111.8	111.0	110.8	111.8
1961	111.0	111.3	112.5	112.7	114.3	115.3	114.3	113.9	113.5	113.1	112.7	113.2
1962	112.5	114.3	115.6	116.1	117.9	119.8	121.3	120.2	120.8	121.9	122.2	121.6
1963	122.3	122.3	122.7	123.2	122.4	122.0	121.0	121.6	124.4	125.6	126.6	129.0
1964	128.3	128.9	128.1	128.9	129.0	130.0	131.5	133.2	133.7	133.2	135.7	137.8
1965	136.7	137.4	138.1	139.1	138.6	138.0	137.0	137.0	136.2	137.2	138.1	139.0
1966	140.3	141.4	142.8	141.1	141.2	140.5	140.8	140.7	140.9	140.8	141.5	142.1
1967	142.5	143.0	145.1	146.3	146.9	150.2	150.1	149.8	149.6	148.4	147.4	146.9
1968	143.9	144.9	144.9	145.2	147.0	149.6	149.8	151.3	152.1	153.1	153.2	153.8
1969	149.0	150.3	151.0	151.6	152.7	155.2	158.3	158.5	158.8	160.5	161.0	161.7

SIC 21 - TOBACCO MANUFACTURES
(Seasonally Adjusted, 1957=59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960		89.9	97.5	98.0	98.8	97.5	97.2	99.6	101.9	104.5	99.3	99.9
1961	90.5	88.2	87.0	86.3	88.0	90.6	92.6	94.8	94.8	93.7	90.3	88.0
1962	86.1	85.3	85.0	83.6	79.9	79.8	80.9	83.0	83.3	84.2	86.4	89.2
1963	88.2	84.9	82.4	82.4	82.4	81.8	84.7	80.5	81.6	82.0	82.1	84.2
1964	85.1	89.2	90.9	94.4	92.4	91.4	88.3	86.1	85.9	85.5	86.5	86.5
1965	85.5	83.5	81.6	80.8	81.8	81.6	82.7	82.8	83.1	82.5	82.1	81.9
1966	83.1	84.6	86.5	86.1	85.6	86.5	85.8	86.0	84.6	85.0	85.3	85.9
1967	84.8	83.3	82.9	84.2	86.4	82.5	82.3	83.0	87.0	87.3	76.1	76.0
1968	73.8	83.2	80.1	79.8	80.4	80.8	80.6	78.7	78.7	79.0	78.0	76.7
1969	73.5	74.7	74.8	74.7	75.2	75.3	75.0	75.1	75.4	76.0	75.2	74.9

SIC 22 - TEXTILE MILL PRODUCTS
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						115.7	115.4	113.4	112.1	110.7	110.8	110.5
1961	113.8	113.4	114.2	115.0	116.5	116.4	119.6	121.2	123.1	124.2	125.0	126.2
1962	127.7	130.2	130.9	130.6	130.6	130.3	130.1	130.5	129.3	128.4	128.3	127.3
1963	125.8	124.7	124.5	125.6	125.8	126.5	127.5	128.0	129.3	131.2	132.4	134.0
1964	136.9	139.2	141.8	144.3	142.1	149.9	152.3	150.9	150.3	154.4	155.6	156.9
1965	159.3	161.7	163.7	166.1	167.9	170.3	171.8	174.0	174.7	176.5	178.6	180.6
1966	182.2	182.2	183.2	184.1	185.7	184.5	188.5	189.4	190.9	190.4	190.2	190.3
1967	190.7	188.1	186.8	185.5	187.1	187.8	187.8	188.5	190.8	193.0	195.0	197.4
1968	199.4	202.6	205.0	203.7	206.1	208.8	210.4	212.3	212.9	213.6	215.3	215.9
1969	216.3	216.1	218.7	219.7	222.8	225.1	228.4	229.8	231.4	229.4	229.3	228.9

SIC 23 - APPAREL AND OTHER FINISHED PRODUCTS
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						114.8	115.2	115.1	115.9	114.8	115.1	114.0
1961	118.9	122.8	119.1	119.6	118.8	119.7	121.9	124.4	126.6	128.4	131.1	133.3
1962	128.4	136.6	138.4	137.6	138.0	139.5	140.7	142.0	144.8	146.6	147.9	148.6
1963	153.1	156.4	163.1	167.7	174.6	179.4	180.8	182.7	183.1	182.3	182.6	183.3
1964	182.3	182.8	182.3	180.8	178.8	180.5	182.9	184.2	184.2	186.6	188.9	189.9
1965	196.0	192.9	194.0	194.7	195.5	197.3	197.4	202.1	204.6	206.9	207.7	208.8
1966	209.7	208.9	208.2	210.5	204.3	206.9	206.6	209.8	211.6	213.2	213.2	215.4
1967	216.7	216.1	216.9	219.3	221.0	227.1	223.4	219.5	219.3	218.2	219.1	219.8
1968	216.8	225.2	230.1	230.6	233.8	239.3	237.1	237.7	238.5	239.2	240.6	240.9
1969	240.5	243.0	244.6	244.1	244.0	249.9	250.6	248.4	254.1	254.0	257.2	255.8

SIC 24 - LUMBER AND WOOD PRODUCTS
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						100.6	100.8	99.0	98.7	96.8	96.7	94.2
1961	95.5	94.0	93.3	93.8	95.2	97.2	98.2	100.5	101.7	101.8	101.9	101.0
1962	97.6	103.7	104.2	104.5	105.9	104.3	105.4	105.1	107.3	108.0	108.9	108.0
1963	114.2	116.0	117.8	120.2	122.1	125.3	126.1	127.7	127.9	128.9	129.2	128.6
1964	126.0	128.3	128.1	127.4	127.7	128.2	128.3	127.3	125.6	126.0	128.7	127.0
1965	128.9	126.7	128.3	129.5	129.5	128.5	130.1	131.3	130.8	133.4	134.7	136.0
1966	137.2	137.1	137.6	139.2	140.8	141.3	141.9	143.2	144.6	144.2	143.4	144.0
1967	144.2	140.6	139.3	137.4	134.9	134.3	130.6	133.8	135.2	135.2	135.2	136.0
1968	133.5	142.7	144.0	145.4	149.3	153.2	156.7	156.9	156.9	156.4	157.2	157.3
1969	159.0	161.8	156.1	163.1	163.5	167.2	166.6	168.0	167.8	167.5	166.6	166.3

SIC 25 - FURNITURE AND FIXTURES
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						103.1	104.6	105.3	104.7	104.7	102.9	102.0
1961	101.4	99.4	98.1	97.9	97.1	97.7	100.7	102.7	105.0	106.0	108.0	109.9
1962	105.8	112.5	114.5	115.5	117.7	120.3	121.5	122.5	124.6	124.5	125.1	124.6
1963	126.3	127.7	129.6	131.2	133.0	135.0	136.6	138.7	139.7	141.6	142.6	142.9
1964	145.8	146.7	146.2	146.8	147.3	146.8	146.4	148.6	150.6	153.5	154.9	157.8
1965	161.1	162.6	165.1	167.1	169.1	170.0	172.2	173.4	174.0	175.1	177.0	178.4
1966	178.3	179.0	179.5	180.4	179.4	181.4	181.9	183.5	184.2	184.8	185.2	183.8
1967	184.1	182.9	182.1	181.0	181.6	181.7	183.5	179.4	178.9	177.3	178.7	181.0
1968	179.1	182.9	185.2	184.6	189.2	192.6	193.0	194.1	194.3	194.9	194.6	196.6
1969	197.2	198.1	198.3	200.6	196.6	197.7	192.7	195.6	194.4	192.4	190.3	185.9

SIC 24 - LUMBER AND WOOD PRODUCTS
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						100.6	100.8	99.0	98.7	96.8	96.7	94.2
1961	95.5	94.0	93.3	93.8	95.2	97.2	98.2	100.5	101.7	101.8	101.9	101.0
1962	97.6	103.7	104.2	104.5	105.9	104.3	105.4	105.1	107.3	108.0	108.9	108.0
1963	114.2	116.0	117.8	120.2	122.1	125.3	126.1	127.7	127.9	128.9	129.2	128.6
1964	126.0	128.3	128.1	127.4	127.7	128.2	128.3	127.3	125.6	126.0	128.7	127.0
1965	128.9	126.7	128.3	129.5	129.5	128.5	130.1	131.3	130.8	133.4	134.7	136.0
1966	137.2	137.1	137.6	139.2	140.8	141.3	141.9	143.2	144.6	144.2	143.4	144.0
1967	144.2	140.6	139.3	137.4	134.9	134.3	130.6	133.8	135.2	135.2	135.2	136.0
1968	133.5	142.7	144.0	145.4	149.3	153.2	156.7	156.9	156.9	156.4	157.2	157.3
1969	159.0	161.8	156.1	163.1	163.5	167.2	166.6	168.0	167.8	167.5	166.6	166.3

SIC 25 - FURNITURE AND FIXTURES
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						103.1	104.6	105.3	104.7	104.7	102.9	102.0
1961	101.4	99.4	98.1	97.9	97.1	97.7	100.7	102.7	105.0	106.0	108.0	109.9
1962	105.8	112.5	114.5	115.5	117.7	120.3	121.5	122.5	124.6	124.5	125.1	124.6
1963	126.3	127.7	129.6	131.2	133.0	135.0	136.6	138.7	139.7	141.6	142.6	142.9
1964	145.8	146.7	146.2	146.8	147.3	146.8	146.4	148.6	150.6	153.5	154.9	157.8
1965	161.1	162.6	165.1	167.1	169.1	170.0	172.2	173.4	174.0	175.1	177.0	178.4
1966	178.3	179.0	179.5	180.4	179.4	181.4	181.9	183.5	184.2	184.8	185.2	183.8
1967	184.1	182.9	182.1	181.0	181.6	181.7	183.5	179.4	178.9	177.3	178.7	181.0
1968	179.1	182.9	185.2	184.6	189.2	192.6	193.0	194.1	194.3	194.9	194.6	196.6
1969	197.2	198.1	198.3	200.6	196.6	197.7	192.7	195.6	194.4	192.4	190.3	185.9

SIC 26 - PAPER AND ALLIED PRODUCTS
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						119.6	119.2	120.1	119.6	119.9	118.9	118.4
1961	120.8	119.5	120.4	121.3	122.0	122.8	123.6	124.8	125.0	125.4	125.9	126.2
1962	124.5	125.0	125.3	127.4	127.8	129.4	129.3	130.7	131.1	131.5	131.8	132.6
1963	128.9	129.6	128.8	126.2	125.5	123.8	123.8	124.0	121.1	125.5	126.2	126.6
1964	130.1	132.5	133.8	135.8	137.3	138.3	139.7	140.0	141.1	141.4	142.0	143.1
1965	144.2	145.0	146.1	146.9	147.9	149.2	149.8	150.5	152.2	153.2	154.9	156.9
1966	159.4	160.8	163.7	167.5	168.1	170.1	172.0	172.1	172.7	173.7	174.7	172.9
1967	172.5	172.9	173.8	171.6	170.8	171.2	171.6	172.0	173.1	173.4	174.2	174.9
1968	175.5	176.1	175.8	176.7	177.5	176.0	177.2	178.3	178.3	178.4	179.5	181.0
1969	182.9	185.1	186.0	189.8	193.6	194.8	196.7	197.4	199.5	200.6	200.6	202.9

SIC 27 - PRINTING, PUBLISHING, AND ALLIED INDUSTRIES
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						111.7	113.2	113.6	113.7	115.4	116.2	115.0
1961	114.2	113.0	113.3	109.7	107.3	107.6	107.6	108.4	109.0	110.4	111.4	114.2
1962	113.2	114.5	114.1	114.1	113.7	113.7	114.9	116.1	115.2	114.3	113.3	112.7
1963	112.0	111.6	111.1	114.0	116.5	117.8	118.6	119.8	121.9	122.3	123.4	124.2
1964	125.8	125.8	125.9	126.0	124.6	125.6	126.9	127.8	128.1	128.9	130.0	131.2
1965	131.4	134.1	135.2	137.0	138.6	140.3	140.7	141.7	143.7	145.8	147.0	148.0
1966	149.8	150.9	153.4	152.8	153.4	155.0	156.5	157.6	158.2	160.3	162.0	162.8
1967	163.2	163.8	164.5	165.2	166.3	164.9	164.9	163.3	161.9	161.9	161.5	162.5
1968	163.2	163.8	164.9	165.3	165.7	167.2	166.1	167.4	167.3	166.9	167.1	167.0
1969	165.5	166.3	165.9	165.0	163.9	165.6	166.7	168.0	168.5	168.8	170.5	170.6

SIC 28 - CHEMICALS AND ALLIED PRODUCTS
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960			112.4	114.8	113.0	111.9	110.4	111.7	112.4	116.3	117.1	119.5
1961	121.1	123.2	124.0	124.9	126.6	128.6	126.7	124.9	122.8	124.8	127.1	131.8
1962	130.0	128.0	125.2	127.4	129.1	130.0	132.9	134.9	138.3	141.8	143.6	144.0
1963	144.4	145.1	148.9	151.0	152.8	151.8	154.1	155.0	155.7	157.2	162.1	166.2
1964	168.4	169.7	169.4	171.3	170.7	171.6	169.8	169.7	169.9	169.7	168.4	166.7
1965	168.9	173.6	178.0	182.1	182.0	184.3	185.9	188.5	189.0	190.8	191.2	193.1
1966	194.9	196.0	195.5	198.7	201.8	203.4	205.3	207.6	209.1	208.9	209.7	209.2
1967	214.1	217.0	219.5	219.2	219.8	222.6	226.5	228.8	229.3	230.6	232.6	231.8
1968	230.7	233.3	234.8	237.3	237.0	237.8	238.0	239.5	245.3	249.9	252.5	250.7
1969	249.8	251.0	251.4	254.7	256.0	254.6	255.8	255.7	261.0	263.4	265.0	261.2

SIC 29 - PETROLEUM REFINING AND RELATED INDUSTRIES
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960			108.4	114.7	113.3	102.0	96.4	90.8	93.8	89.6	89.2	90.2
1961	106.0	125.0	139.3	146.8	134.7	117.5	100.8	97.7	98.6	98.7	98.1	99.5
1962	103.6	109.9	112.5	115.7	116.4	116.3	116.3	118.6	112.8	107.4	100.5	102.5
1963	104.6	107.7	109.3	111.4	112.9	113.9	116.0	116.3	119.6	126.0	131.4	135.3
1964	125.3	119.4	111.0	115.1	116.8	120.3	121.9	124.5	126.3	125.5	125.3	126.2
1965	125.4	125.1	122.6	123.2	122.7	122.9	125.8	129.6	128.8	127.7	126.1	130.5
1966	135.4	139.7	141.4	144.4	143.0	140.9	140.2	139.3	142.7	143.5	145.5	144.8
1967	138.3	135.5	129.9	136.3	141.2	152.8	155.0	146.5	135.2	131.7	145.3	155.4
1968	151.1	153.0	152.9	152.4	151.0	151.3	148.6	144.6	145.6	147.7	146.9	140.1
1969	147.1	157.9	175.3	176.1	178.1	174.2	177.9	171.6	165.5	161.7	159.8	159.7

SIC 30 - RUBBER AND MISCELLANEOUS PLASTIC PRODUCTS
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						116.3	117.5	116.0	114.8	113.8	112.6	110.3
1961	112.6	115.0	116.2	118.5	122.5	125.8	127.8	128.1	129.8	129.9	131.4	131.8
1962	131.8	132.1	131.5	130.5	130.5	131.2	131.6	131.4	134.0	135.2	139.0	140.7
1963	139.3	146.7	151.7	155.1	154.5	156.7	164.5	154.2	156.9	159.8	158.2	159.6
1964	159.4	156.6	157.7	159.2	161.5	162.1	163.4	171.3	175.5	173.5	174.8	174.3
1965	179.8	186.7	192.7	199.9	208.7	220.1	218.8	223.9	222.4	223.9	226.2	230.1
1966	229.4	232.2	233.3	236.8	237.7	237.8	240.7	239.5	241.8	243.0	244.7	243.8
1967	249.4	249.3	246.0	247.1	227.8	234.9	231.3	254.5	257.6	260.8	265.1	266.0
1968	273.2	274.6	281.0	283.8	288.6	298.1	295.6	298.2	301.8	305.2	312.6	318.4
1969	318.0	326.5	326.3	336.8	340.5	348.4	354.1	351.4	359.2	363.8	369.6	379.7

SIC 31 - LEATHER AND LEATHER PRODUCTS
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960			101.6	101.1	99.0	98.8	101.1	102.5	101.3	99.1	98.5	98.6
1961	98.0	99.2	100.3	100.1	99.5	98.0	96.9	97.1	98.9	101.2	103.2	104.5
1962	105.2	105.3	105.0	104.7	104.9	103.8	104.2	104.0	105.5	106.1	107.3	107.3
1963	108.7	109.3	111.5	114.5	118.4	123.0	124.8	127.8	125.7	126.1	124.6	127.2
1964	128.4	128.1	128.9	128.2	131.3	134.1	136.6	137.3	137.0	136.8	136.5	138.7
1965	139.5	141.4	140.5	139.1	136.7	133.4	134.4	136.6	141.4	144.0	144.2	145.1
1966	146.8	150.7	153.4	154.9	155.0	156.6	158.5	159.8	158.8	157.4	157.1	155.7
1967	155.5	151.7	154.9	154.5	155.4	154.4	153.7	153.3	153.9	155.7	158.4	161.9
1968	160.0	156.7	158.2	161.8	163.6	165.6	165.5	164.5	162.6	163.0	164.3	167.7
1969	167.1	162.4	162.0	163.2	163.0	160.3	153.6	148.6	145.8	147.3	151.6	159.4

SIC 32 - STONE, CLAY, GLASS, AND CONCRETE PRODUCTS
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960	120.9	117.3	110.6	121.2	114.9	115.7	115.3	115.4	112.7	118.3	116.6	116.5
1961	120.8	118.8	115.9	115.2	115.1	115.6	117.8	123.0	123.8	119.1	125.4	129.0
1962	118.5	133.3	136.9	136.7	138.0	140.3	141.3	142.7	143.9	144.4	143.2	140.0
1963	143.6	140.7	144.7	146.5	148.8	150.2	151.3	151.7	152.9	154.0	152.8	150.5
1964	146.2	153.7	154.3	154.3	154.6	155.0	154.2	155.0	152.5	156.6	159.7	160.9
1965	164.1	164.5	163.7	165.7	167.3	166.4	168.7	167.8	165.1	165.2	165.3	167.4
1966	163.5	160.2	159.7	160.3	154.3	152.8	152.1	151.7	151.9	150.4	149.3	149.2
1967	149.2	148.7	150.7	150.0	149.1	150.7	150.5	152.7	152.9	153.6	155.6	157.3
1968	155.1	156.0	153.8	156.0	159.0	163.0	162.2	161.5	163.3	163.1	160.4	167.0
1969	166.5	174.0	167.9	163.6	164.0	166.6	169.5	167.4	168.0	170.2	167.2	171.5

SIC 33 - PRIMARY METAL INDUSTRIES
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960			84.7	85.0	84.6	83.4	83.4	81.8	80.7	80.7	79.9	79.2
1961	79.0	78.2	78.1	76.8	80.6	83.7	88.4	91.1	92.3	94.1	95.2	95.6
1962	92.7	94.0	93.5	92.8	92.5	94.6	94.1	95.3	97.5	99.7	101.0	100.4
1963	107.6	113.3	121.4	123.1	126.0	127.6	128.5	129.6	130.4	131.1	133.2	133.9
1964	139.3	141.7	147.6	144.6	147.0	148.9	149.4	152.0	155.4	155.9	156.4	155.1
1965	154.3	154.5	153.8	155.2	153.5	153.8	156.8	157.2	153.4	153.5	152.0	154.1
1966	156.6	157.7	159.1	159.8	162.6	163.9	165.0	168.2	169.1	170.9	172.7	169.8
1967	166.6	157.8	157.2	153.6	156.4	157.2	159.2	157.9	157.8	156.4	158.7	159.7
1968	160.6	162.2	164.7	164.8	165.0	158.1	151.1	143.6	152.0	156.7	160.9	164.9
1969	168.0	170.7	172.8	168.9	173.4	174.9	176.2	176.6	178.2	183.5	188.9	196.7

SIC 34 - FABRICATED METAL PRODUCTS
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960			112.0	109.1	108.3	108.7	111.6	111.6	112.8	110.4	109.2	109.7
1961	113.2	113.5	111.8	109.6	108.2	107.7	108.6	110.1	113.0	114.9	115.7	116.7
1962	116.4	117.5	118.2	123.4	122.4	120.9	120.5	118.9	127.7	128.1	131.1	125.0
1963	129.7	131.7	134.9	138.1	138.8	142.6	144.4	146.8	147.8	146.9	148.8	149.4
1964	150.8	150.2	151.5	151.0	153.0	155.5	157.4	156.5	155.8	158.4	160.7	162.4
1965	163.6	163.1	161.5	161.5	161.4	169.8	170.1	173.0	169.7	173.8	177.1	182.6
1966	186.3	190.1	193.7	195.7	197.9	200.6	201.7	202.4	203.0	203.8	203.3	203.3
1967	206.1	208.0	210.6	207.2	205.0	202.7	202.9	204.7	209.0	210.0	211.0	207.7
1968	208.2	209.6	218.4	216.6	217.0	216.7	218.4	220.4	221.8	225.0	228.4	233.9
1969	234.3	234.1	234.1	233.4	233.0	232.9	232.9	236.0	239.9	243.6	244.4	246.8

SIC 35 - MACHINERY, EXCEPT ELECTRICAL
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960	133.7	134.9	136.4	135.8	133.1	133.6	138.1	125.6	129.5	128.3	130.2	125.7
1961	120.7	120.6	115.0	122.6	125.0	127.7	126.6	130.8	129.9	132.1	135.7	134.2
1962	133.1	136.5	137.7	144.8	146.2	149.1	151.2	155.5	153.3	156.7	157.0	155.3
1963	172.1	175.9	177.3	178.0	182.4	176.5	180.1	179.4	186.3	186.1	190.2	189.0
1964	190.6	187.8	192.1	190.0	190.1	198.2	207.1	200.9	204.7	206.1	203.9	210.7
1965	211.1	217.7	220.9	224.6	227.6	222.6	240.3	236.0	236.7	241.2	246.9	245.0
1966	232.7	241.3	247.2	251.3	248.7	256.4	252.5	263.5	261.5	260.1	266.5	267.8
1967	272.3	272.2	254.9	271.3	273.2	273.8	279.4	276.9	280.4	283.2	281.6	282.6
1968	286.6	295.9	296.6	300.5	312.9	313.1	322.0	323.4	325.3	332.6	336.8	338.2
1969	339.7	344.0	339.4	343.6	347.1	356.2	371.5	392.8	384.0	375.6	371.1	361.0

SIC 36 - ELECTRICAL MACHINERY
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960	134.9	137.1	139.7	138.0	130.7	125.7	123.9	114.5	119.3	117.3	111.3	113.0
1961	128.0	131.5	132.2	132.9	136.8	138.3	146.4	148.6	150.0	158.1	155.4	160.2
1962	187.5	197.7	192.6	187.5	192.0	200.3	187.8	175.2	185.3	204.4	190.3	184.9
1963	185.2	185.5	190.0	207.0	200.3	206.8	208.7	217.9	229.3	227.1	231.1	231.8
1964	225.0	225.8	222.4	228.1	230.6	236.3	240.5	239.7	241.9	245.4	245.8	251.3
1965	259.7	262.3	267.8	268.9	266.5	265.2	278.3	296.1	300.7	309.6	316.0	325.0
1966	333.5	345.7	358.6	373.4	389.8	401.7	394.8	390.1	388.1	389.9	391.2	395.4
1967	398.4	396.8	393.9	389.2	385.7	383.5	390.1	390.3	393.6	401.5	409.0	419.6
1968	429.4	436.5	442.1	446.5	452.2	460.3	462.9	493.0	488.1	482.2	470.9	476.3
1969	474.8	496.2	497.7	503.1	526.5	536.2	558.6	585.1	588.5	582.5	571.1	558.4

SIC 37 - TRANSPORTATION EQUIPMENT
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960			96.7	98.0	96.1	100.7	100.7	103.2	97.2	104.8	100.5	95.1
1961	85.0	84.5	83.7	85.8	85.2	84.2	86.6	89.6	90.1	89.8	97.7	100.9
1962	103.9	108.1	111.2	112.7	114.3	121.5	122.6	127.8	129.3	132.4	133.2	131.7
1963	142.8	144.6	147.4	149.2	155.5	155.2	157.4	159.9	163.6	168.0	170.1	169.9
1964	178.4	179.5	186.1	184.3	186.6	192.1	195.3	186.8	192.3	190.7	193.7	206.1
1965	195.8	203.6	205.5	214.7	216.7	216.7	221.2	227.7	216.7	232.0	241.4	240.2
1966	238.9	239.1	246.4	245.5	246.4	242.6	250.6	248.7	257.5	267.7	251.6	257.9
1967	241.1	264.4	250.6	256.1	263.2	268.7	264.4	270.4	273.0	270.5	274.4	273.9
1968	277.2	281.9	281.5	263.8	288.9	301.1	304.4	307.3	301.3	318.7	325.1	322.2
1969	314.5	326.4	335.8	329.9	332.4	333.0	338.5	365.6	353.2	366.7	369.7	353.4

TOTAL NONDURABLE GOODS INDUSTRIES
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						113.6	114.4	114.0	113.7	113.3	113.0	112.9
1961	114.4	114.9	114.8	115.2	115.9	116.6	117.5	118.3	119.1	119.7	120.4	121.5
1962	120.3	122.7	123.4	123.9	124.3	125.5	126.4	126.5	127.2	127.6	128.3	128.2
1963	127.9	128.7	130.1	131.4	132.1	133.0	134.9	133.9	134.7	136.4	136.9	138.6
1964	139.5	140.4	140.8	141.7	141.4	143.7	145.4	146.6	146.9	147.9	149.6	150.9
1965	152.3	153.1	154.6	156.2	157.1	158.4	158.4	160.0	160.7	162.3	163.5	165.1
1966	166.3	168.9	168.5	169.4	169.0	169.6	170.9	171.6	172.5	173.0	173.5	173.8
1967	174.6	174.3	174.8	175.2	175.0	177.2	176.6	177.0	177.5	177.6	178.0	178.8
1968	178.3	180.6	182.1	182.5	184.6	186.8	186.9	188.3	188.8	189.6	190.7	191.8
1969	190.2	191.9	192.9	194.4	195.9	198.7	201.0	200.8	202.8	210.7	212.0	213.0

TOTAL DURABLE GOODS INDUSTRIES
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						105.6	106.3	104.4	103.4	104.8	102.9	101.2
1961	101.5	101.0	99.7	100.2	101.3	102.4	105.2	108.1	109.2	110.4	113.3	114.9
1962	115.6	121.4	122.0	122.7	124.1	127.2	126.5	126.8	129.9	133.4	129.8	130.3
1963	137.1	139.1	143.0	146.7	148.9	150.3	152.1	154.2	157.3	158.4	160.1	159.9
1964	161.5	160.4	165.9	165.3	166.9	168.8	171.5	172.0	170.9	173.7	175.0	178.5
1965	178.2	180.5	181.6	184.9	185.1	185.4	190.5	193.7	190.5	195.8	199.4	201.5
1966	201.5	203.8	207.9	210.4	212.1	213.9	214.8	215.6	217.7	220.0	217.5	218.6
1967	215.7	218.3	214.1	214.6	215.5	216.6	217.1	218.4	220.1	220.6	223.0	224.3
1968	225.8	230.0	232.1	229.5	237.5	240.5	241.5	244.0	244.3	249.1	250.8	253.3
1969	252.4	259.3	260.0	259.1	263.0	266.0	271.0	281.5	279.5	282.4	282.1	278.7

TOTAL MANUFACTURING
(Seasonally Adjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						109.9	110.6	109.6	108.8	109.4	108.5	107.4
1961	108.3	108.4	107.9	108.2	109.3	110.3	112.0	113.6	114.5	115.3	117.0	118.3
1962	118.2	122.1	122.8	123.4	124.2	126.2	126.5	126.6	128.5	130.3	130.1	129.0
1963	132.1	133.6	136.0	138.4	139.7	140.9	142.0	143.2	145.1	146.2	147.6	148.2
1964	149.5	150.8	152.1	152.4	152.9	155.6	157.4	157.3	158.5	159.2	161.0	163.4
1965	164.0	165.7	166.7	169.0	169.7	170.4	173.0	175.3	174.1	177.5	179.8	181.6
1966	182.4	183.8	185.8	187.9	188.7	189.7	190.7	191.6	193.0	194.0	193.5	194.3
1967	193.1	194.3	192.8	193.1	193.4	195.0	194.9	196.0	197.0	197.2	198.5	199.4
1968	200.0	203.2	204.9	203.9	208.5	211.3	211.5	213.6	214.1	216.6	217.8	219.7
1969	218.5	222.3	223.4	223.8	226.4	229.3	232.8	237.6	237.9	239.6	243.9	242.7

APPENDIX C

PRODUCTION INDEX
SIXTH FEDERAL RESERVE DISTRICT STATES
SIC 20 - FOOD AND KINDRED PRODUCTS
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						109.3	112.0	112.0	113.7	114.7	114.6	113.2
1961	111.7	110.5	110.1	108.8	111.3	113.8	113.7	114.0	115.4	116.8	116.5	114.7
1962	113.3	113.6	113.1	112.2	114.8	118.2	120.7	120.3	122.8	125.8	126.3	123.2
1963	123.2	121.6	120.0	119.3	119.2	120.3	120.4	121.8	126.5	129.6	130.9	130.9
1964	129.2	128.1	125.1	124.9	125.6	128.1	130.9	133.6	136.0	137.1	140.1	139.8
1965	137.7	136.5	134.7	134.9	135.0	136.0	136.6	137.7	138.7	141.0	142.4	140.9
1966	141.4	140.2	139.2	136.9	137.6	138.6	140.7	141.7	143.8	144.6	145.8	144.1
1967	143.3	141.5	141.2	141.8	143.2	148.3	150.2	151.1	152.8	152.3	151.6	148.9
1968	144.6	143.2	141.0	140.7	143.4	147.8	150.1	152.7	155.5	157.0	157.4	155.8
1969	149.7	148.5	146.9	146.9	148.9	153.5	158.6	160.1	162.3	164.0	165.5	163.8

SIC 21 - TOBACCO MANUFACTURES
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960		91.7	92.7	90.7	89.1	86.5	87.8	93.4	101.3	105.1	113.6	111.0
1961	105.5	90.0	82.7	79.9	79.4	80.4	83.6	89.0	94.2	94.2	103.3	102.2
1962	100.2	87.0	80.9	77.4	72.3	71.0	73.2	77.9	82.7	84.6	98.7	103.4
1963	102.3	86.5	78.6	76.5	74.9	73.2	76.9	75.5	80.8	82.2	93.7	97.5
1964	98.3	90.5	86.7	87.8	84.4	82.3	80.6	80.8	84.8	85.6	98.4	99.6
1965	98.3	84.4	78.0	75.4	75.1	74.1	75.9	77.8	81.8	82.5	93.1	93.9
1966	95.3	85.1	82.8	80.6	78.8	79.0	79.2	81.0	83.3	85.2	96.5	98.0
1967	96.8	83.4	79.4	78.9	79.6	75.6	76.2	78.3	85.6	87.6	86.0	86.4
1968	84.2	83.1	76.7	74.9	74.0	74.1	74.8	74.4	77.4	79.4	88.1	87.0
1969	83.8	74.5	71.7	70.1	69.3	69.1	69.6	71.0	73.5	75.7	86.3	94.5

SIC 22 - TEXTILE MILL PRODUCTS
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						115.9	114.0	114.0	113.1	112.4	111.9	110.3
1961	113.1	113.3	113.6	113.9	115.6	116.6	118.2	121.8	124.2	126.1	126.3	125.9
1962	127.0	130.2	130.3	129.4	129.5	130.6	128.5	131.1	130.5	130.3	129.7	127.2
1963	125.2	124.7	123.8	124.4	124.7	126.8	125.8	128.5	130.5	133.2	134.0	134.3
1964	136.2	139.2	140.8	142.8	140.6	150.2	150.1	151.3	151.6	156.7	157.7	157.8
1965	158.8	161.9	162.5	164.2	165.9	170.5	169.0	174.2	176.2	179.1	181.2	182.3
1966	181.9	182.6	181.7	181.9	183.2	184.6	185.1	189.4	192.7	193.3	193.5	192.9
1967	190.3	188.5	185.0	183.0	184.3	187.6	184.2	188.4	192.7	195.9	198.6	200.6
1968	199.1	203.3	202.9	200.8	202.9	208.5	206.2	212.1	215.1	216.8	219.3	219.5
1969	215.9	216.5	216.5	216.6	219.2	224.7	223.8	229.6	233.9	232.8	233.7	232.8

SIC 23 - APPAREL AND OTHER FINISHED PRODUCTS
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						110.2	113.2	119.5	123.4	124.0	124.4	119.5
1961	118.1	119.4	111.0	109.6	110.4	114.8	119.8	129.1	134.8	138.7	141.8	139.7
1962	127.8	132.9	129.1	126.1	128.1	133.7	138.3	147.3	154.1	158.5	159.9	155.8
1963	152.7	152.2	152.1	153.5	162.0	171.7	177.5	189.6	195.0	197.4	197.6	192.5
1964	182.3	177.6	169.8	165.3	165.8	172.4	179.5	191.0	196.1	202.2	204.2	199.5
1965	196.9	187.4	180.5	178.0	181.3	188.1	193.8	209.3	217.7	224.3	224.2	219.3
1966	211.5	203.0	193.5	192.6	189.7	197.0	202.9	217.1	225.1	231.2	230.1	226.4
1967	218.8	209.9	201.2	200.8	205.4	216.1	219.5	226.9	233.3	236.7	236.3	230.9
1968	219.2	218.7	213.4	211.2	217.5	227.8	233.0	245.5	253.6	259.3	259.2	252.8
1969	243.4	235.9	226.7	223.6	227.2	237.9	246.3	256.4	270.1	275.3	277.0	268.6

SIC 24 - LUMBER AND WOOD PRODUCTS
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						102.2	101.0	99.5	99.0	97.1	96.6	93.2
1961	93.9	93.4	92.5	93.9	96.2	98.8	98.4	101.0	102.0	102.1	101.8	99.9
1962	96.1	103.0	103.4	104.7	107.0	105.8	105.6	105.6	107.5	108.3	108.9	107.1
1963	112.6	115.0	117.0	120.6	123.3	126.8	126.2	128.3	128.1	129.4	129.5	128.2
1964	124.4	126.7	127.2	127.8	128.7	129.3	128.3	127.8	125.6	126.6	129.2	127.2
1965	127.6	124.8	127.5	129.8	130.3	129.1	129.9	131.7	130.8	134.2	135.4	137.0
1966	136.2	134.7	136.9	139.4	141.4	141.5	141.5	143.7	144.7	145.3	144.5	145.7
1967	143.1	137.8	138.6	137.3	135.3	134.2	130.2	134.2	135.5	136.3	136.2	137.9
1968	132.6	139.7	143.3	145.2	149.6	152.9	156.1	157.3	157.4	157.8	158.3	159.6
1969	158.6	158.4	155.3	162.9	163.8	166.9	165.9	168.3	168.5	169.0	167.8	168.8

SIC 25 - FURNITURE AND FIXTURES
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						101.9	101.9	104.3	105.3	105.8	104.0	103.3
1961	101.8	100.4	98.7	97.5	95.9	96.5	98.1	101.7	105.6	107.1	109.2	111.3
1962	106.3	113.7	115.2	115.0	116.4	118.8	118.3	121.3	125.2	125.8	126.5	126.3
1963	127.0	129.3	130.5	130.7	131.6	133.4	132.9	137.3	140.1	143.0	144.3	145.2
1964	146.5	148.5	147.2	146.2	145.8	145.0	142.3	147.1	150.6	154.7	156.6	160.5
1965	162.1	164.8	166.4	166.5	167.6	168.0	167.2	171.7	173.6	176.2	178.9	181.7
1966	179.7	181.5	181.0	179.7	177.9	179.4	176.7	181.8	183.7	185.7	187.2	187.7
1967	185.3	185.2	183.5	180.1	180.0	179.7	178.4	177.9	178.4	177.9	180.6	185.0
1968	180.3	185.1	186.7	183.7	187.5	190.6	187.7	192.5	193.7	195.4	196.6	200.8
1969	198.6	200.5	199.9	199.6	194.8	195.7	187.5	194.0	193.8	193.0	192.2	189.8

SIC 26 - PAPER AND ALLIED PRODUCTS
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						120.3	119.7	121.9	119.7	120.7	119.1	117.9
1961	120.3	117.9	120.1	120.3	121.4	123.6	124.1	126.6	125.1	126.3	126.2	125.7
1962	124.0	123.4	125.0	126.4	127.2	130.3	129.9	132.5	131.2	132.3	132.0	132.0
1963	128.3	128.0	128.6	125.3	125.0	124.9	124.5	125.6	121.2	126.2	126.2	125.9
1964	129.4	130.9	133.7	134.8	136.8	139.7	140.8	141.6	141.2	142.0	141.8	142.1
1965	143.4	143.4	146.0	145.9	147.5	150.9	151.2	152.0	152.4	153.7	154.4	155.6
1966	158.5	159.2	163.6	166.4	167.7	172.3	173.7	173.7	173.1	174.2	174.2	171.7
1967	171.4	171.1	173.5	170.4	170.3	173.5	173.3	173.6	173.6	173.9	173.8	173.7
1968	174.3	174.2	175.5	175.4	177.0	178.4	178.9	180.0	178.8	178.8	179.0	179.7
1969	181.6	183.1	185.6	188.3	193.0	197.5	198.7	199.2	200.1	201.0	200.0	201.5

SIC 27 - PRINTING, PUBLISHING, AND ALLIED INDUSTRIES
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						106.0	111.3	116.3	120.7	123.9	123.9	121.0
1961	115.5	109.6	106.6	101.3	101.0	102.1	105.8	111.0	115.8	118.6	118.8	120.2
1962	114.6	111.1	107.4	105.5	107.0	107.9	113.0	118.8	122.2	122.7	120.8	118.6
1963	113.4	108.4	104.6	105.6	109.7	112.0	116.7	122.5	129.1	131.2	131.5	130.7
1964	127.2	122.2	118.6	117.0	117.3	119.6	124.9	130.5	135.3	137.9	138.3	137.9
1965	133.0	130.5	127.6	127.8	130.6	133.8	138.6	144.5	151.3	155.5	156.1	155.4
1966	151.7	147.1	145.1	143.0	144.7	148.1	154.2	160.6	166.1	170.6	172.0	171.0
1967	165.2	159.7	155.7	154.9	156.9	157.7	162.5	166.3	169.8	172.0	171.3	170.7
1968	165.2	159.8	156.3	155.2	156.3	160.0	163.7	170.4	175.2	177.1	177.2	175.4
1969	167.5	162.3	157.3	154.9	154.7	158.5	164.4	171.0	176.4	179.1	180.7	179.1

SIC 28 - CHEMICALS AND ALLIED PRODUCTS
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960			111.4	113.3	114.6	112.7	110.2	109.2	110.3	115.4	118.3	122.4
1961	123.9	122.6	122.8	123.3	128.3	129.5	126.4	122.2	120.4	123.7	128.4	134.9
1962	132.9	127.4	124.0	125.8	130.8	131.0	132.7	132.3	135.8	140.7	144.8	147.1
1963	147.3	144.2	147.4	149.3	154.8	153.0	154.2	152.8	153.4	156.2	162.9	169.5
1964	170.9	168.3	167.6	169.6	172.7	173.0	170.4	168.3	168.0	168.7	168.5	169.3
1965	170.7	172.0	176.0	180.5	183.7	186.0	187.0	188.1	187.8	190.0	190.5	195.2
1966	196.2	194.2	193.4	197.0	203.3	205.4	207.0	208.1	208.6	208.4	208.6	210.9
1967	214.8	214.7	216.8	217.2	221.0	224.9	228.7	229.8	229.5	230.3	231.3	233.3
1968	231.2	230.7	231.9	235.0	238.1	240.1	240.5	240.8	245.7	249.6	250.9	252.0
1969	250.0	248.2	248.1	252.1	257.0	257.1	258.6	257.2	261.5	263.1	263.4	262.5

SIC 29 - PETROLEUM REFINING AND RELATED INDUSTRIES
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960			108.5	113.0	113.8	104.6	98.9	92.3	94.8	90.5	89.1	87.7
1961	104.0	121.2	139.4	144.6	135.3	120.4	103.4	99.3	99.7	99.7	98.0	96.7
1962	102.0	106.7	112.2	113.5	116.5	118.8	119.2	120.9	114.4	108.8	100.6	100.1
1963	103.4	104.8	108.2	108.5	112.3	115.6	118.6	119.3	122.1	128.3	132.4	133.5
1964	124.1	116.0	108.7	111.1	115.4	121.3	124.5	128.2	129.6	128.4	127.0	125.7
1965	124.6	121.4	119.0	117.8	120.5	123.5	128.5	133.7	132.8	131.2	128.4	130.8
1966	134.7	135.3	136.2	137.3	140.0	141.5	143.4	143.7	147.6	147.9	148.5	145.6
1967	137.5	131.1	124.6	129.3	138.2	153.6	158.7	150.9	139.9	135.9	148.4	156.1
1968	150.2	148.0	146.5	144.6	147.9	152.3	152.2	148.7	150.4	152.4	150.1	140.6
1969	146.2	152.9	167.8	167.1	174.5	175.4	182.4	176.2	170.9	166.9	165.9	163.7

SIC 30 - RUBBER AND MISCELLANEOUS PLASTIC PRODUCTS
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						116.5	116.0	115.5	114.3	115.2	112.6	110.7
1961	113.4	114.6	116.5	118.3	122.2	126.1	126.1	127.6	129.2	131.4	131.4	132.3
1962	132.8	131.7	131.7	130.2	130.3	131.4	129.8	131.2	133.5	136.8	139.1	141.3
1963	140.3	146.2	151.8	154.7	154.3	156.5	162.1	154.4	156.6	161.8	158.5	160.4
1964	160.5	156.1	157.7	158.6	161.0	161.2	160.7	171.8	175.6	175.8	175.4	175.1
1965	181.6	186.6	192.7	198.6	207.5	217.9	214.6	224.7	223.3	226.9	227.7	231.0
1966	232.5	232.9	233.5	234.4	235.6	234.6	235.4	240.3	243.5	246.3	247.4	245.1
1967	253.3	250.6	246.3	243.7	224.9	231.2	225.6	255.0	260.1	264.2	268.9	267.4
1968	277.9	276.5	281.5	279.5	284.2	293.0	288.1	298.3	305.1	309.1	317.6	319.9
1969	323.7	329.1	326.9	331.4	335.1	342.1	344.9	351.4	363.2	368.5	375.5	381.6

SIC 31 - LEATHER AND LEATHER PRODUCTS
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960			99.4	96.6	95.5	98.0	102.8	105.0	103.8	100.5	98.9	99.0
1961	99.5	99.6	98.1	95.5	96.0	97.2	98.5	99.5	101.4	102.6	103.6	105.0
1962	106.8	105.9	102.8	100.1	101.2	102.8	105.9	106.5	108.3	107.6	107.6	107.7
1963	110.3	110.2	109.3	109.6	114.0	121.6	126.7	131.0	129.2	128.0	125.0	127.6
1964	129.9	129.4	126.6	123.1	126.2	132.1	138.4	140.8	140.9	138.9	136.9	138.9
1965	140.8	143.1	138.4	134.0	131.3	131.1	135.9	140.1	145.3	146.1	144.8	145.2
1966	147.9	152.8	151.4	149.8	149.0	153.6	159.9	163.7	163.0	159.8	158.3	156.1
1967	156.2	153.8	152.9	149.7	149.5	151.3	154.8	156.9	157.6	158.0	160.1	162.4
1968	160.6	158.9	156.2	157.0	157.4	162.2	166.6	168.2	166.3	165.2	166.2	168.3
1969	167.6	164.7	160.1	158.5	157.0	156.9	154.5	151.9	149.0	149.2	153.4	159.9

SIC 32 - STONE, CLAY, GLASS, AND CONCRETE PRODUCTS
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960	113.6	111.5	107.5	120.7	118.6	121.3	120.1	119.4	115.3	119.2	115.9	111.6
1961	113.6	113.0	112.6	114.7	118.8	121.1	122.7	127.3	126.6	120.1	124.6	123.5
1962	111.6	126.9	133.1	136.3	142.4	146.9	147.1	147.7	146.9	145.4	142.4	134.3
1963	135.6	133.8	140.8	146.2	153.3	156.9	157.4	157.0	155.8	154.9	152.4	145.1
1964	138.4	145.9	150.2	154.1	158.8	161.5	160.2	160.4	155.0	157.1	159.6	156.0
1965	156.0	156.0	159.6	165.6	171.1	173.0	175.0	173.6	167.6	165.3	165.6	163.4
1966	156.0	151.7	155.8	160.1	157.3	158.5	157.7	156.9	154.2	150.3	149.9	146.8
1967	142.4	140.5	147.0	149.7	151.5	156.1	155.9	157.9	155.4	153.4	156.3	155.5
1968	148.1	147.3	150.0	155.6	161.2	168.7	167.9	166.9	166.1	162.9	161.1	165.3
1969	159.0	164.1	163.7	163.1	166.1	172.4	175.4	172.9	170.9	170.0	168.0	170.0

SIC 33 - PRIMARY METAL INDUSTRIES
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960			85.9	88.1	87.3	86.3	84.6	81.8	79.8	78.2	76.3	76.8
1961	77.7	78.2	79.2	79.6	83.2	86.6	89.6	91.1	91.3	91.2	90.9	92.8
1962	91.3	94.0	94.8	96.2	95.4	97.8	95.4	95.3	96.4	96.7	96.6	97.6
1963	106.1	113.3	122.8	127.4	129.9	131.7	130.1	129.6	129.1	127.5	128.0	130.7
1964	137.5	141.4	148.7	149.2	151.2	153.2	151.2	152.1	153.9	151.8	151.1	152.1
1965	152.8	154.0	154.3	159.5	157.6	157.7	158.3	157.3	152.0	149.7	148.0	152.0
1966	155.6	156.9	159.0	163.5	166.6	167.5	166.5	168.5	167.5	166.9	169.3	168.6
1967	165.8	156.6	156.5	156.6	160.0	160.3	160.4	158.2	156.2	153.0	156.3	159.2
1968	160.0	160.7	163.7	167.6	168.7	161.1	152.1	143.9	150.4	153.2	158.8	164.6
1969	167.3	169.0	171.6	171.6	177.2	178.0	177.4	177.0	176.2	179.5	186.4	196.3

SIC 34 - FABRICATED METAL PRODUCTS
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960			107.3	106.5	108.0	111.5	113.6	114.6	113,9	112.7	110.8	110.8
1961	110.2	109.4	107.1	106.9	107.9	110.5	110.6	113.1	114.1	117.3	117.4	117.9
1962	113.6	113.4	113.3	120.3	122.0	124.1	123.0	122.2	128.8	130.5	132.8	126.2
1963	127.1	127.4	129.4	134.4	138.2	146.4	147.8	151.0	148.9	149.2	150.4	150.6
1964	148.3	145.7	145.5	146.8	152.0	159.5	161.6	161.0	156.9	160.1	161.8	163.1
1965	161.5	159.0	155.6	157.2	160.2	173.9	174.9	178.0	170.8	175.0	177.8	182.7
1966	184.5	186.3	187.3	191.0	196.3	204.8	207.5	208.2	204.6	204.9	203.8	203.1
1967	204.1	204.3	204.1	202.7	203.4	206.3	208.4	210.4	210.8	211.2	211.3	207.1
1968	206.2	206.2	212.0	212.3	215.3	220.2	224.0	226.4	223.8	226.2	228.6	232.9
1969	232.2	230.4	227.3	229.0	231.1	236.4	238.7	242.4	242.1	244.8	244.6	245.6

SIC 35 - MACHINERY, EXCEPT ELECTRICAL
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960	131.0	136.1	134.2	137.8	136.4	137.5	131.9	129.8	131.8	127.5	127.1	123.6
1961	118.2	121.7	113.2	124.4	128.1	131.4	120.9	135.1	132.3	131.2	132.4	131.9
1962	130.4	137.6	135.7	146.8	149.5	153.5	144.7	160.4	156.3	156.0	153.3	152.9
1963	168.4	176.9	175.0	180.1	185.6	181.8	172.9	184.8	190.5	185.9	186.2	186.5
1964	186.1	188.2	189.5	191.5	192.5	204.1	199.8	206.4	210.0	206.5	200.4	207.9
1965	205.8	217.7	217.9	225.5	229.4	229.5	233.0	242.0	243.3	242.5	243.4	241.4
1966	226.6	241.2	243.4	251.4	250.1	264.4	246.0	270.0	269.0	262.5	264.2	263.6
1967	264.3	271.8	250.2	270.7	274.4	282.4	272.9	284.0	288.2	286.3	279.8	277.6
1968	277.9	295.6	290.7	299.6	314.3	322.9	314.7	331.7	334.3	336.1	335.1	331.4
1969	329.2	343.7	332.3	342.6	348.8	367.2	363.3	403.0	394.4	379.7	369.2	353.8

SIC 36 - ELECTRICAL MACHINERY
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960	130.7	134.5	137.5	134.3	132.0	126.2	123.5	116.1	121.1	120.5	115.0	112.2
1961	124.0	129.0	130.0	129.3	138.1	138.8	145.9	150.7	152.3	162.3	160.6	159.0
1962	181.8	193.9	189.3	182.9	193.6	201.3	187.3	177.7	188.3	209.8	196.1	183.5
1963	179.7	181.6	186.6	202.7	201.7	208.3	208.1	221.1	233.4	232.6	237.2	230.1
1964	218.6	220.7	218.3	224.7	231.8	238.5	239.9	243.0	246.4	250.2	250.3	249.4
1965	253.3	256.8	263.3	266.7	267.8	268.1	278.0	299.6	305.9	313.9	319.2	322.2
1966	326.8	339.5	353.8	372.4	391.8	406.0	394.8	394.4	394.0	393.5	392.9	392.2
1967	391.5	390.7	389.9	389.1	388.2	387.3	390.4	394.1	398.5	403.6	409.4	415.9
1968	423.0	430.6	438.7	447.1	455.8	464.6	463.1	497.3	493.5	483.5	470.8	472.3
1969	468.2	489.8	494.7	504.1	531.2	541.0	558.6	589.8	594.4	584.3	570.5	553.9

SIC 37 - TRANSPORTATION EQUIPMENT
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960			95.1	98.8	97.2	103.5	101.7	104.2	96.7	102.7	97.7	91.4
1961	85.5	87.6	82.2	86.5	86.2	86.6	87.5	90.5	89.7	88.0	95.0	97.0
1962	104.3	112.0	109.2	113.6	115.6	124.8	124.0	129.1	129.1	129.8	129.8	127.0
1963	142.4	149.4	144.4	150.2	157.1	159.4	159.7	161.4	164.6	165.1	166.5	164.7
1964	176.3	184.5	181.1	185.0	188.6	196.9	198.7	188.7	195.2	187.9	190.6	200.7
1965	191.9	208.2	198.5	214.8	218.5	222.2	225.8	230.3	221.7	229.4	239.0	234.8
1966	232.3	243.5	235.7	245.1	248.1	248.7	256.4	252.6	264.6	265.8	251.1	253.0
1967	232.8	268.3	237.9	255.0	264.1	275.6	271.0	275.4	280.9	269.5	274.9	268.9
1968	266.9	285.5	266.1	262.3	289.7	308.9	312.1	313.4	310.3	317.9	326.0	316.0
1969	302.2	330.3	317.0	327.6	333.4	341.7	347.0	373.3	353.5	366.0	370.8	346.7

TOTAL NONDURABLE GOODS INDUSTRIES
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						113.8	115.4	117.2	117.8	118.7	118.4	116.5
1961	116.5	115.3	114.2	113.1	114.9	116.1	118.5	121.8	123.7	125.6	126.2	125.7
1962	122.4	123.2	122.3	121.4	123.3	126.1	125.7	130.6	132.1	134.3	134.4	132.6
1963	130.5	129.4	128.7	128.5	130.3	132.9	134.4	137.6	140.4	143.2	143.5	143.2
1964	141.8	140.6	139.1	138.5	139.2	143.6	146.4	150.2	152.4	155.0	156.2	156.0
1965	154.8	153.6	152.5	152.8	154.7	158.2	159.6	164.2	166.9	169.8	170.9	170.6
1966	169.6	168.0	166.7	166.3	166.7	169.8	172.6	176.2	179.3	181.1	181.6	179.7
1967	184.5	172.0	169.8	168.8	169.4	174.4	175.2	178.9	182.0	183.4	183.8	182.4
1968	178.9	178.5	177.1	176.1	178.7	184.1	185.5	190.5	193.8	195.5	196.7	195.4
1969	191.2	189.6	187.6	187.6	190.1	195.6	199.1	203.0	207.7	209.7	210.9	209.7

TOTAL DURABLE GOODS INDUSTRIES
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						112.7	109.7	110.1	108.3	108.9	105.3	103.5
1961	102.3	103.9	99.4	104.9	107.7	109.2	109.3	113.5	113.8	114.7	116.2	115.7
1962	114.2	124.5	123.7	127.0	128.2	134.0	129.6	130.7	136.0	136.4	134.4	130.9
1963	138.1	142.0	143.6	150.9	155.4	159.0	156.3	160.6	163.8	163.3	163.0	160.8
1964	160.5	163.8	165.4	168.2	171.3	177.2	173.7	175.2	178.2	175.9	176.4	178.5
1965	175.3	181.0	179.6	190.1	191.0	193.3	193.6	199.3	197.3	200.1	203.0	200.7
1966	200.1	207.1	208.3	216.7	214.7	224.4	221.7	227.9	230.0	227.7	226.0	224.4
1967	211.3	126.5	209.3	214.3	216.9	220.7	219.2	221.7	223.2	220.5	222.8	222.5
1968	221.1	228.0	226.7	229.4	239.0	244.9	243.6	247.8	248.0	249.2	250.6	251.0
1969	247.1	256.9	253.4	258.3	264.5	270.8	273.5	285.8	281.2	282.4	282.0	276.3

TOTAL MANUFACTURING
(Seasonally Unadjusted, 1957-59=100)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1960						113.9	113.5	114.4	113.9	114.8	113.0	111.0
1961	110.5	110.6	108.3	110.2	112.4	113.5	115.1	118.6	119.5	121.4	122.2	121.8
1962	119.5	124.6	123.6	124.6	126.2	130.3	129.1	131.2	134.5	135.7	135.1	132.6
1963	134.7	135.7	136.2	139.4	142.6	145.7	145.2	148.5	151.8	153.0	153.2	151.8
1964	150.8	151.7	151.6	152.9	154.5	159.7	159.7	162.5	164.9	165.2	166.2	167.2
1965	165.0	166.7	165.5	170.5	171.7	175.1	176.0	180.8	181.4	184.6	186.5	185.0
1966	184.3	186.4	186.5	190.0	189.4	195.6	195.7	200.5	203.3	203.1	203.0	201.0
1967	191.6	192.4	187.8	189.6	191.1	195.5	195.1	198.2	201.2	200.3	201.6	200.4
1968	198.1	201.3	199.8	200.2	206.3	211.6	211.9	216.5	218.4	220.8	221.8	221.2
1969	247.1	256.9	253.4	258.3	264.5	270.8	273.5	285.8	281.2	282.4	282.0	276.3

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