

June 1964

FEDERAL RESERVE BANK OF ST. LOUIS

Review

CONTENTS

	Page
<i>Inventories Continue in Balance</i>	1
<i>Value Added by Manufacture, Central Mississippi Valley Metropolitan Areas, 1957 to 1964</i>	5
<i>Beef Cattle Prices</i>	11



Volume 46 • Number 6
FEDERAL RESERVE BANK
OF ST. LOUIS
P.O. Box 442, St. Louis, Mo. 63166

Inventories Continue in Balance

THE CURRENT BUSINESS RECOVERY, now in its fourth year, is one of the longest of the postwar period. A significant characteristic of the present expansion is the apparent absence of excessive inventory accumulation. Unlike earlier periods, when stock building assumed rather sizable proportions as the expansion progressed, inventory accumulation to date has been closely coordinated with the rise in sales.

One widely used yardstick for measuring the inventory position of businesses is the ratio of inventories to sales. An important consideration of businessmen in setting inventory levels is the ongoing pace of sales. As sales fluctuate, producers alter raw material purchases and production schedules so as to achieve an appropriate inventory level. If sales rise, material purchases and production are usually stepped up. Greater inventories of raw materials, goods in process, and finished goods are necessary to support a larger volume of production and sales. If sales decline, material purchases and production are normally cut back until the desired relationship is regained. Both retailers and wholesalers act in much the same manner in attempting to maintain a balance between inventories and sales.

Despite these underlying relationships, the inventory-sales ratio tends to rise around cyclical peaks and fall during late recessions and early recoveries. As sales increase during a period of expansion, businessmen build inventories all along the line. Inventory policies are based not only on *current* sales, but also on *anticipated* sales as well as expected developments in other areas such as prices. For example, retailers and wholesalers at-

tempt to hedge against the possibility of lengthened delivery schedules by adding to their stocks of finished goods. Similarly, producers, anticipating shortages, bottlenecks, or price rises, build raw material supplies and may also build up their finished goods stocks. As a consequence, during an expansion inventories tend to increase at a faster rate than sales. This is reflected in a rise in the inventory-sales ratio.

Just after cyclical peaks there frequently are unplanned increases in the stocks-sales ratio. When the pace of economic activity slackens and sales fall off, the ratio will continue to rise until businessmen are able to bring inventories into line with sales. Attempts to reduce inventories continue throughout the recession.

By the time the trough of business activity is reached, the ratio of inventories to sales ordinarily has started to decline. The decline usually continues for several months into the early recovery period. This results from three considerations. First, since there is typically some imbalance between inventories and sales at such times, businessmen are willing to reduce inventories. Second, businessmen hesitate to build up inventories until there is evidence that the increase in sales is permanent. Third, since production for inventories takes some time, the inventory-sales ratio may decline for a period even after businessmen decide to rebuild them if sales are rising.

Movements in the inventory-sales ratio have implications for the entire economy. It is frequently suggested that one of the underlying factors tending to amplify cyclical swings in economic activity has been increases or decreases in the inventory-sales relationship. For example, in the late expansionary periods, inventories are generally accumulated at a more rapid rate than final sales, adding to business activity.

Inventories have increased since the trough of the 1960-1961 recession. However, the rise in inventories has not been as rapid as the rise in sales. Since February 1961, manufacturing and trade inventories have increased by about \$12 billion, and sales have risen by \$13.2 billion.¹ The ratio of inventories to sales² has declined from 1.61 in February 1961 to 1.48 in March 1964 (see chart). The recent stocks-sales ratio is near the low end of the range of values which has prevailed during the past 11 years. Since 1953, the ratio has moved between a high of 1.69 (December 1953) and a low of 1.47 (May 1959 and February 1964).

The view that inventory levels are currently low is supported by a comparison of recent stocks-sales ratios with those of the 1954-57 and 1958-60 expansions.

¹ As this *Review* went to press, new estimates of manufacturing and trade sales and inventories were released. Although the estimates were extensively revised, the basic theme and conclusion of this article have not been affected.

² The ratio is computed by dividing end-of-month inventory figures by monthly sales figures.



After touching a high of 1.69 in December 1953, the ratio declined throughout the remainder of the recession, which ended in August of 1954, and the first part of the subsequent recovery. It reached a low in mid-1955, stayed relatively stable for several months, and then began to rise. In the last twelve months of the expansionary period, the inventory-sales ratio averaged 1.58. It peaked at 1.68 during the 1957-58 recession. The pattern during the 1958-61 business cycle was essentially the same. In the recovery which began in 1961, the ratio followed the typical pattern of declining during the early part of the recovery. From February 1961 to April 1962, the ratio fell from 1.61 to 1.49. Since April of 1962, however, the ratio has remained relatively stable, fluctuating between 1.54 and 1.47.

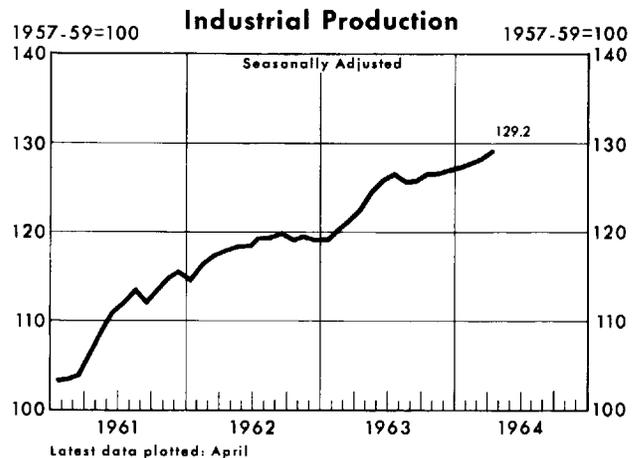
In evaluating the recent relatively low inventory-sales ratios, trend should also be taken into consideration. Businessmen probably desire to hold somewhat smaller inventories in comparison to sales than they did several years ago. Inventories are costly to maintain in terms of interest on funds needed to finance them, storage space, insurance, and handling, and they carry the risk of obsolescence. Hence, over the years better techniques of inventory control have been introduced which have enabled businessmen to reduce the desired level of inventories. These techniques have been made possible through the use of high-speed electronic computers. Faster transportation and the virtual elimination of shortages may also be responsible for reducing inventories. In addition, book values of a given amount of inventory may be somewhat lower because of changed accounting procedures.

Since 1953, there has been a decline at an average rate of about $\frac{1}{2}$ of 1 per cent per year in the inventory-sales ratio (using a least squares trend line). Nevertheless, the recent level of the stocks-sales ratio falls significantly below the trend line. So far this year the ratio has averaged 97.2 per cent of the trend line compared to an average of 99.0 per cent since the last trough in the business cycle (February 1961). The averages for the previous two periods of economic expansion were 97.7 per cent and 98.9 per cent, and at cyclical peaks the ratios have generally been above the trend line.

In summary, recent movements in the inventory-sales ratio suggest that businessmen have succeeded in maintaining an apparently desirable balance between inventories and sales. This balance suggests that there may not have been any significant overinvestment in inventories thus far during the current expansion.

Business Developments

Elsewhere in the economy, most indicators point to high and rising levels of activity. Industrial production in April measured 129.2 per cent of the 1957-59 average, up one point from March, and up at a 4.7 per cent annual rate since the fourth quarter of 1963.



The April advance was concentrated in steel, autos, and business equipment. In May, steel production increased further, and auto assemblies were maintained at the record April level. Outlays for new construction in May were at an annual rate of \$66.7 billion, the same as in April. This was up at a 2.6 per cent annual rate from the fourth quarter of last year.

New orders for durable goods increased by \$1.3 billion, or 7 per cent from March to April. The April gain followed two months of decline. Since the fourth quarter of 1963, new orders have risen at an annual rate of 32 per cent. Except for electrical equipment, all major groups showed gains in April. The largest increases were for primary metals and aircraft.

Total employment, as estimated from household surveys, has been growing at an annual rate of 4.6 per cent since the last quarter of 1963. Seasonally adjusted, total employment rose by 750,000 from March to April, the largest monthly increase in four years, and then increased by 195,000 from April to May. Payroll employment, based on reports from employing establishments, expanded by an estimated 200,000 from March to April.

Economic strength is indicated not only by the rapid growth in employment in recent months, but also by the rate of increase of the labor force. From the fourth quarter of 1963 to May 1964, the labor force rose at an annual rate of 3.5 per cent. This rate of increase is much greater than the rate of increase of the working-age population and indicates a demand

for labor strong enough to attract many new entrants into the labor force.



Personal income in April was at a seasonally adjusted annual rate of \$483 billion, \$2 billion higher than in March, and up at an annual rate of 5.0 per cent from the fourth quarter of 1963. Most of the increase from March to April was in wages and salaries, which rose about \$1.6 billion.

Retail sales have increased substantially since the final months of 1963. Sales averaged \$21.5 billion in the March-May period, up at an annual rate of 8 per cent since the fourth quarter of 1963. By comparison, retail sales had risen at an average annual rate of 3.9 per cent from 1957 to 1963.

Both consumer prices and wholesale prices have been relatively stable in recent months. The consumer price index in April was 107.8, about unchanged since December. The wholesale price index edged lower in April and early May as food prices fell slightly.

Financial Developments

The nation's money supply (demand deposits and currency) averaged a seasonally adjusted \$154.9 billion in May, \$100 million more than in March.³ Since March, money has risen at a 0.4 per cent annual rate, compared with a 2.2 per cent rate since December and a 4.0 per cent rate since September 1962. From 1951 to 1963 the money supply rose at an average annual rate of 2.0 per cent.

Money supply plus time deposits in commercial banks rose \$1.9 billion from March to May, or at an annual rate of 4.2 per cent. By comparison, the increase has been at an annual rate of 6.3 per cent since December and 8.4 per cent since September 1962.

The rate of growth in time deposits of commercial banks has been declining in recent months. Through January 1964, the rate of increase remained at the high levels which had prevailed since mid-1960. From January to May, however, these deposits increased at a rate of only 9.8 per cent per year compared with an average rate of increase of about 18 per cent over the past four years.

Total liquid assets held by the public rose at about the same rate in the first four months of 1964 as in the comparable period a year earlier. The public's holdings of money, time deposits in commercial and mutual savings banks, postal savings, savings and loan shares, savings bonds, and U. S. Government securities maturing within one year rose at an annual rate of 6.6 per cent from the fourth quarter of 1963 to April. In the like period a year earlier, these assets rose at a 7.0 per cent rate. In early 1964 there have been increases in the outstanding quantity of Treasury securities maturing within one year and in time deposits in mutual savings banks (where there were increases in interest rates paid). The remaining liquid

Continued on page 10

³ In the near future the Board of Governors will release a money supply series which will contain revisions in the unadjusted data as well as in the seasonal adjustment factors. An analysis of these new data may cast a somewhat different light on the recent past.

New Member Bank

The First National Bank in Osceola, Osceola, Arkansas, succeeded the nonmember Mississippi County Bank, Osceola, on May 1. The new national bank has a capital of \$200,000 and surplus of \$400,000. Its officers are: C. B. Wood, Chairman of the Board; J. W. Farris, President; H. F. Ohlendorf, Vice President; C. E. Dean, Vice President; C. L. Anderson, Jr., Vice President and Cashier; Mary E. Balloue, Assistant Cashier; Charles R. Wilks, Assistant Cashier; Nora Wise, Assistant Cashier and Manager, Luxora Office; Fred F. Alexander, Assistant Cashier and Manager, Joiner Office.

Value Added by Manufacture

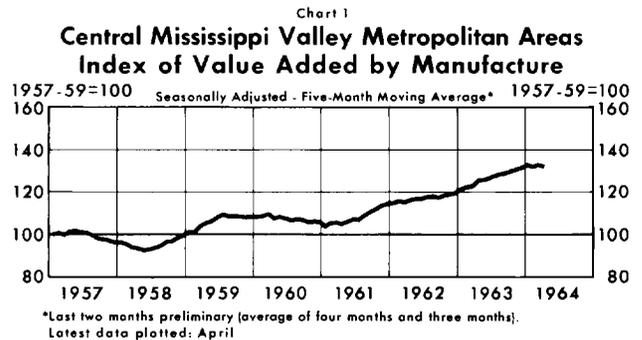
Central Mississippi Valley Metropolitan Areas

1957 to 1964

THIS ARTICLE presents newly developed monthly estimates of value added by manufacture for 1957 to 1964 in seven metropolitan areas of the Central Mississippi Valley.¹ Data from the *Census of Manufactures* for 1958 and the *Survey of Manufactures* for 1957 and 1959-62 are used as benchmarks. Interpolation and extrapolation by months is based on industrial use of electric power data. These data on value added will be kept current each month in this bank's "Selected Economic Indicators - Central Mississippi Valley Metropolitan Areas," which is available on request. This series will replace the present series on the industrial use of electric power. A technical appendix at the end of this article describes the method used in developing monthly estimates of value added by manufacture.

Value added by manufacture to goods processed in the metropolitan areas of the Central Mississippi Valley totaled \$5.9 billion in 1963 (Table I), about 3 per cent of total value added by manufacture in the United States. From 1957 to 1963, value added in

these metropolitan areas increased at a 4.6 per cent annual rate (Chart 1).



During the first three months of 1964, value added by manufacture in these areas reached an average annual rate of \$6.2 billion.² Since the end of 1963, increases in value added have occurred in St. Louis and Springfield. Little change has occurred in Louisville and Memphis, and some declines have occurred in Little Rock, Evansville, and Fort Smith (see Charts 2 to 8 on following pages).

¹ These are the seven metropolitan areas located wholly or primarily in the Eighth Federal Reserve District: St. Louis, Louisville, Memphis, Little Rock, Evansville, Springfield, Mo., and Fort Smith.

² Throughout this article, value added figures for a period of less than a whole year are presented as seasonally adjusted annual rates.

Table I
VALUE ADDED BY MANUFACTURE
CENTRAL MISSISSIPPI VALLEY METROPOLITAN AREAS
(Millions of Dollars)

Metropolitan Areas	1957 ¹	1958 ²	1959 ¹	1960 ¹	1961 ¹	1962 ¹	1963 ³	First Quarter ³ 1964
St. Louis	2,484	2,383	2,689	2,753	2,727	2,910	3,166	3,379
Louisville	1,212	1,161	1,331	1,247	1,279	1,416	1,552	1,591
Memphis	439	394	448	476	508	537	554	571
Evansville	303	273	243	274	259	293	321	352
Little Rock	91	103	121	130	137	146	153	152
Springfield	74	78	78	89	97	106	112	117
Fort Smith	47	54	60	62	66	71	76	81
Total	4,650	4,446	4,970	5,031	5,073	5,479	5,934	6,243

¹ U. S. Department of Commerce, *Annual Survey of Manufactures*.

² U. S. Department of Commerce, *Census of Manufactures*.

³ Estimated by converting monthly data on industrial use of electric power to value added. First quarter of 1964 is presented as a seasonally adjusted annual rate.

Value Added as a Measure of Manufacturing Activity

Value added by manufacture is a measure of the manufacturing process's contribution to the dollar value of total output. It comprises the dollar volume of payments in the form of wages and salaries (including supplements, such as social security contributions), profits, interest, and rent, as well as reserves for depreciation and taxes attributable to the manufacturing process. Purchases of raw materials, supplies, and power utilized are excluded. This measure, when extended to include all forms of national economic activity, is identical to the dollar value of gross national product.

The value added data presented in this article are not adjusted for price changes; therefore, the data may reflect price changes as well as output changes.³ Since the 1957-63 period was one of relative price stability, it may be that price changes introduce only a slight upward bias in the value added data as a measure of physical output.

The value added measure presented in this article takes account of year-to-year changes in the industrial structure of the areas under consideration. In contrast, physical production indexes, which are sometimes used as a measure of manufacturing activity in sub-areas of the national economy, frequently do not take account of changes in the industry mix. Generally speaking, local area production indexes are adjusted for these structural changes only periodically as data become available from the Census of Manufactures (last available for 1958). Data based on value added and industrial use of electric power are automatically adjusted to account for changes in industrial structure.

The value added data presented in the following charts have been converted to index numbers with 1957-59 = 100. The data are five-month moving averages of seasonally adjusted figures.

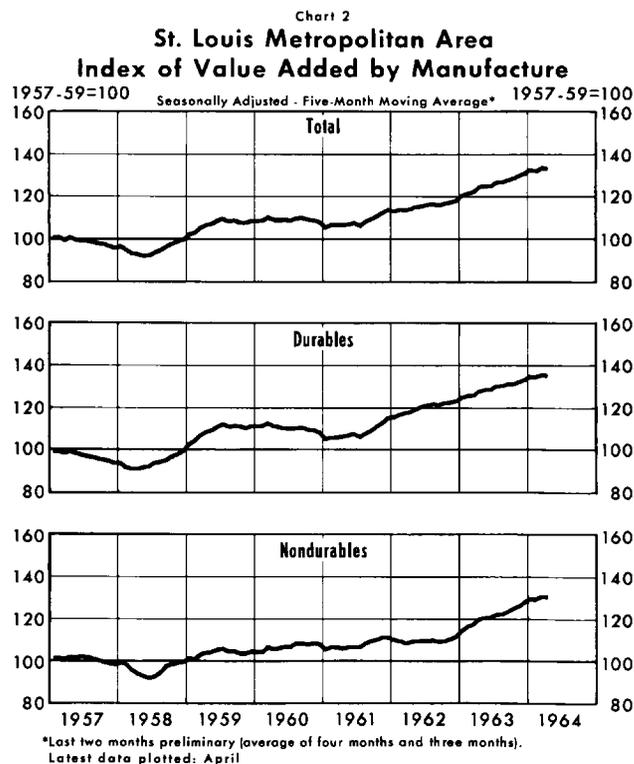
St. Louis

Value added by manufacture in the St. Louis Metropolitan Area since 1957 has risen at an average annual rate of 5.0 per cent, reaching \$3.4 billion in the first quarter of 1964 (Chart 2). Manufacturing declined from early 1957 to mid-1958 and then rose rapidly to mid-1959. Subsequently, value added was about unchanged to early 1961 and then during the next three years increased at a 9.3 per cent annual rate.

Durable goods manufacture has risen more rapidly since 1957 than has the production of nondurables.⁴ From the first quarter of 1957 to the first quarter of 1964, value added in durables manufacturing rose at a 5.2 per cent annual rate compared with a 4.4 per cent rate for nondurables. Since late 1962, production of nondurables has risen rapidly, reflecting a substantial rise in chemicals manufacturing.

³ There are many unresolved problems involved in the selection of the proper price deflator for value added in a metropolitan area.

⁴ Durables include such items as steel, autos, and machinery; and nondurables include food, clothing, tobacco, and chemicals.

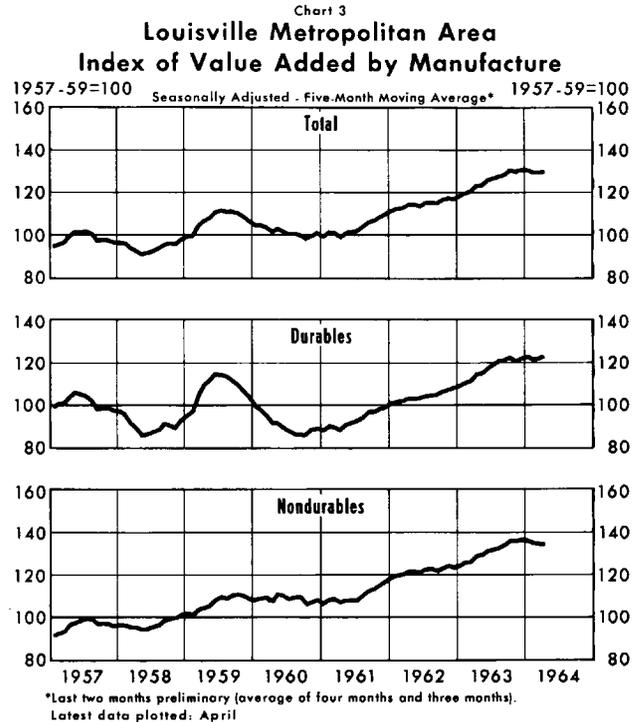


Louisville

In the Louisville Area, value added by manufacture in the first quarter of 1964 averaged \$1.6 billion, an increase at a 5.2 per cent annual rate from the first quarter of 1957 (Chart 3); most of the increase has been in the last three years. From early 1957 to early 1961, manufacturing varied moderately around the \$1.2 billion level.

Manufacture of durable goods during the past seven years has risen moderately, with an increase at a 12 per cent rate since 1960 more than offsetting a sharp decrease from mid-1959 to late 1960. A large share of the increase since 1960 has occurred in electrical and nonelectrical machinery.

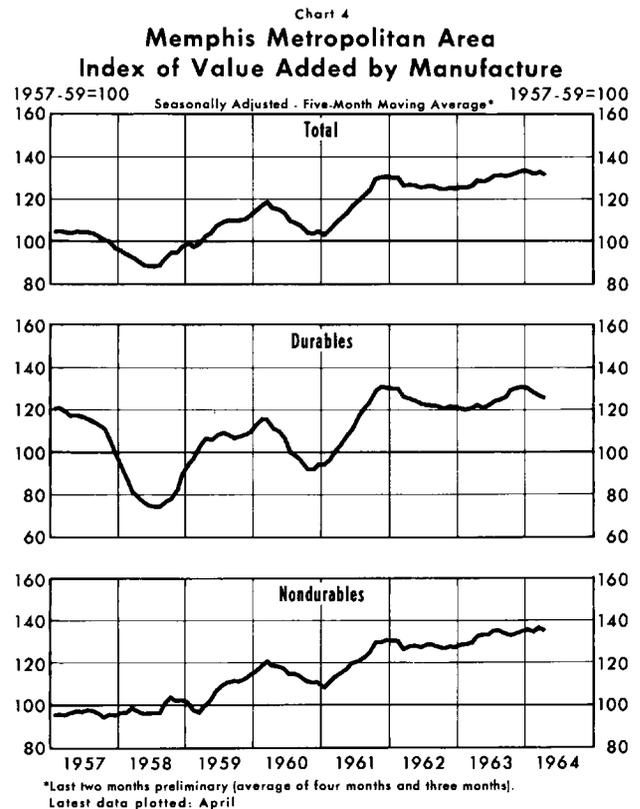
Nondurables manufacturing has risen since early 1957 at a 6.6 per cent average annual rate. Manufacture of chemicals has been the major factor in the increase in nondurables.



Memphis

Value added by manufacturing in the Memphis Area reached \$571 million in the first three months of 1964, rising at an average annual rate of 4.0 per cent over the past seven years (Chart 4). After rising at a 6.0 per cent rate from early 1957 to late 1961, manufacturing remained at a high level during the next two years.

Increases in manufacturing were primarily in the production of nondurables, which rose at a 6.3 per cent annual rate. Food processing and chemicals contributed the major part of this rise. Manufacturing of durable goods was virtually unchanged, on balance, from early 1957 to early 1964.

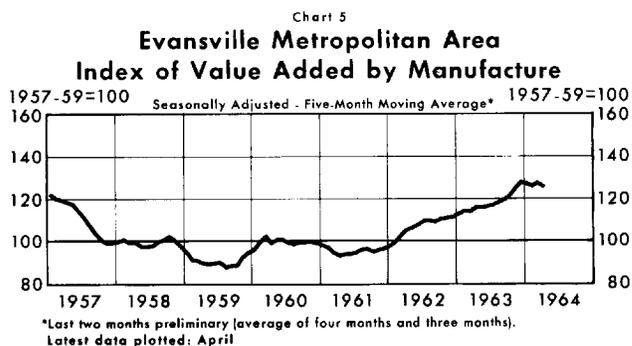


CHARTS and Tables of economic data for each of the seven metropolitan areas discussed here, including charts similar to those used in this article, are published monthly in a report of this bank entitled **SELECTED ECONOMIC INDICATORS — CENTRAL MISSISSIPPI VALLEY METROPOLITAN AREAS**. This report is available upon request.

Other Metropolitan Areas

In the Evansville Metropolitan Area value added by manufacture averaged \$352 million in early 1964, slightly above the level of early 1957 (Chart 5). A rise at an 11.0 per cent rate from the last quarter of 1959 to the first quarter of 1964 more than offset a sharp decrease in the previous three years. Electrical machinery manufacturing has increased significantly since late 1959.

Little Rock manufacturing rose from \$91 million of value added in 1957 to \$153 million in 1963, an annual



Measuring Manufacturing Activity in Local Areas

VARIOUS METHODS have been used for developing indexes of manufacturing activity in local areas. Each method is basically an estimating procedure, since complete data on the physical or dollar value of manufacturing output are not regularly available frequently and currently.

Procedures for estimating local manufacturing activity differ substantially. Most methods allocate and extrapolate benchmark data, but different procedures and data are used. Some procedures estimate value added, as in this article, while others attempt to measure physical output.

One method for estimating indexes of physical output of manufacturing in metropolitan areas and states weights the monthly use of electric power in each industry classification by the value added per kilowatt hour in 1958 (last year for which Census benchmark data are available).¹ A shortcoming of this procedure is that physical output in the various industries may not have been changing proportionately with electric power consumed since 1958, giving a bias to the series.

Another method for estimating physical output of manufacturing for a local area adjusts the individual manufacturing components for the national industrial production index each month by the ratio of man-hours worked in the region to man-hours worked in the nation, each adjusted for estimated output per man-hour.² A problem in this approach is to obtain adequate information on relative changes in output per man-hour nationally and regionally for each industry. Such an approach may not be valid for individual metropolitan areas, since an area usually represents a very small portion of national output.

1 The Federal Reserve Bank of Chicago has published such indexes for several metropolitan areas in the Seventh District. For example, see, "Electric Power Consumption—An Output Indicator in Milwaukee," *Business Conditions*, Federal Reserve Bank of Chicago, April 1962, pp. 5-11. The Federal Reserve Bank of Minneapolis publishes a similar index for an area composed of four northern states in: *Economic Indicators*, Federal Reserve Bank, Minneapolis, Minnesota.

2 See "Measuring New England's Manufacturing Production," *New England Business Review*, Federal Reserve Bank of Boston, October 1963.

Estimates of physical manufacturing output by methods similar to those described have been supplemented by actual physical output data for some leading industries.³ However, unless the actual data cover a substantial share or a representative sample of an area's production, this method may not be a significant improvement over other procedures, and the cost of collecting such data may exceed the benefits from them in most regions.

A physical index of manufacturing activity for local areas has some advantages over a value added index in measuring the economic performance of an area, especially during periods of changing prices. Also, with a physical measure, comparisons between the region and nation are easier, since the national index is on this basis.

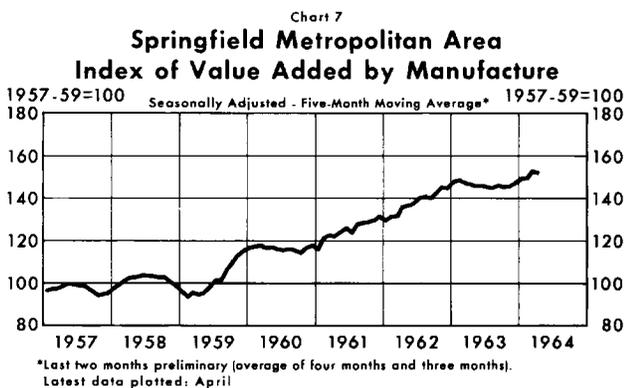
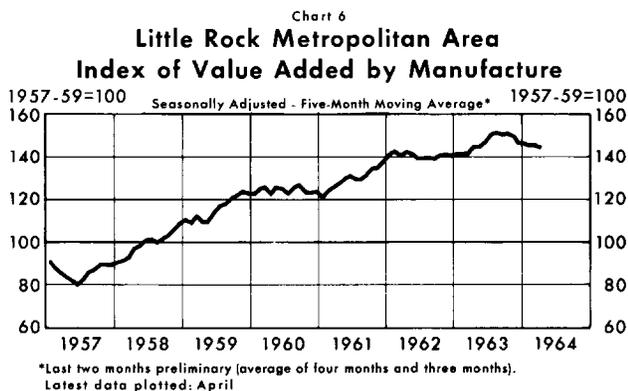
However, the value added concept is also more meaningful for some purposes, since it relates closely to wage and salary payments, profits, interest, and rent, and it indicates the local manufacturing's contribution to gross national product. Value added may be used for comparing manufacturing activity among sub-areas of the economy, because comparable estimates are provided annually for states, metropolitan areas, and large industrial counties.

The estimating procedure for obtaining a monthly index of value added by manufacturing in local areas, as presented in the accompanying article, is probably more accurate than most estimates of local area physical output, since fairly accurate benchmark data on value added are available annually.

The method employed in this article is used, despite some shortcomings, in the belief that it provides the best measure available of local manufacturing activity.

3 The Dallas Federal Reserve Bank publishes monthly such a physical index for the State of Texas in the Statistical Supplement to its *Business Review*. This index uses actual output data for production of crude oil, natural gas, gas liquids, and refined gas and oil products and estimates of other manufacturing output from man-hour data, productivity trends, and value of shipments.

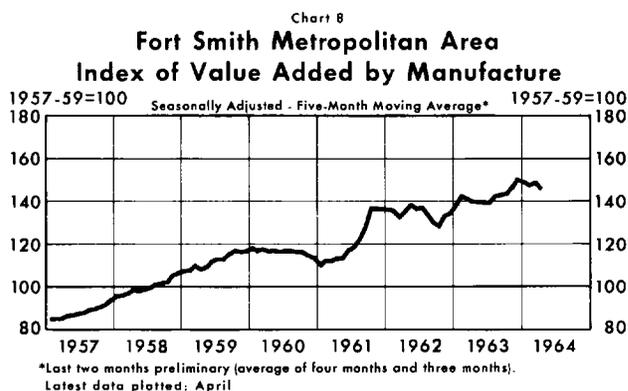
rate of increase of 11 per cent (Chart 6). Since late 1963, some decline has occurred, mainly in food processing.



Value added by manufacture in Springfield averaged \$117 million in the first quarter of 1964, reflecting an 8.3 per cent annual rate of increase since early 1957 (Chart 7). Most of this rise occurred from early

1959 to early 1963, a period when value added rose at a 15 per cent rate. During the past year, manufacturing has been about unchanged. Growth in Springfield's manufacturing has been primarily in food processing.

The Fort Smith Area's value added in early 1964 averaged an annual rate of \$81 million, representing an increase at an 11 per cent rate during the previous seven years (Chart 8). A marked rise occurred in



the last half of 1961 when a new electrical machinery manufacturing plant was opened. From early 1962 to early 1964 production has increased at a 9.0 per cent rate.

LEONALL C. ANDERSEN

Appendix — Estimation of Monthly Value Added

The Bureau of the Census provides two sources of value added data for metropolitan areas. A comprehensive Census of Manufactures is conducted periodically, most recently for 1958. In non-census years, a Survey of Manufactures is conducted. This Survey uses a probability sample of manufacturing firms to provide estimates of value added by manufacture. Included in the sample are all large manufacturing plants, which account for more than two-thirds of total employment of all manufacturing establishments in the United States, and varying proportions of the more numerous medium and small-sized establishments. Both the Census and the Surveys provide value added data for states, standard metropolitan statistical areas, and large industrial counties.

The Census Bureau's value added figures are derived in three steps: first, the cost of materials, supplies, containers, fuel, purchased electricity, and contract work is subtracted from the total value of shipments for manufactured prod-

ucts including receipts for services rendered. Second, to this result is added the value added by merchandising operations (that is, the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly). Third, this figure is adjusted for the net change in finished goods and work-in-progress inventories between the beginning and end of the year.

The Census Bureau's reports of value added are subject to at least two limitations for short-run analysis. The reports provide only annual totals and are available only after a time lag of about one year.

Estimating Monthly Value Added in Larger Metropolitan Areas

A standard procedure for developing monthly data from an annual total is to allocate the annual total on the

basis of a closely related monthly series. Monthly data for industrial use of electric power provides such a means for allocating Census estimates of annual value added to months.

The Federal Reserve Bank of St. Louis receives monthly reports from public utility firms on the electric power use of large manufacturing firms in each of the Central Mississippi Valley Metropolitan Areas. In addition, electric power data are reported to the bank by large firms which generate electricity for their own use.

For the years 1957 and 1959-1962, the Annual Survey of Manufactures provides annual estimates of value added for St. Louis, Louisville, and Memphis by several industry classifications. Similar data for 1958 are available in the Census of Manufactures.

For each of these metropolitan areas, monthly allocations of annual value added in each reported industry classification were made. For each year from 1957 to 1962, each industry's yearly value added was divided by its annual electric power use; this provided a yearly estimate of value added per kilowatt hour. For 1963 and 1964, estimates of industry value added per kilowatt hour were developed by projecting 1957-62 trends. Monthly value added for each industry classification was estimated by multiplying the value added per kilowatt hour (a yearly ratio) by monthly kilowatt hours of power. The

value added data were seasonally adjusted (including a working-day adjustment).

To develop monthly estimates (daily average basis) of total value added in manufacturing, estimates for both total durables and total nondurables manufacturing (developed by summing the adjusted estimates of component industries) were totaled. Monthly data were converted to an annual rate by multiplying the daily average for each month by the number of working days in each year. Five-month moving averages were calculated in order to smooth irregular movements. In the charts presented in this article, the data were converted to index numbers with 1957-59 = 100.

Estimation of Monthly Value Added in Other Metropolitan Areas

Except in Census of Business years, annual breakdowns of value added by industries are unavailable for Little Rock, Evansville, Fort Smith, and Springfield. Therefore, each year's value added per kilowatt hour for total manufacturing was multiplied by total electric power use (daily average) in each month to get an estimate of monthly value added (daily average). This was then converted to a seasonally adjusted annual rate in the same manner as for the three larger metropolitan areas.

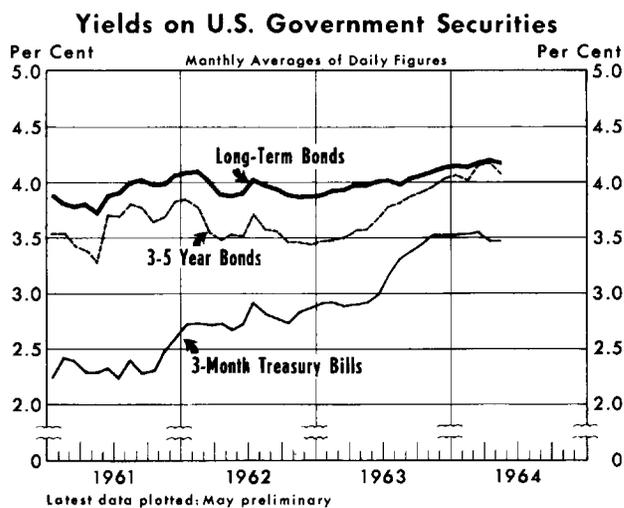


Inventories Continue in Balance—Continued from page 4

holdings rose at a lesser rate in early 1964 than in early 1963.

Bank credit was about unchanged from March to May, according to preliminary figures. Although total bank loans continued to increase at about the rate which has prevailed since late 1962, these gains in the past two months were about matched by declines in total bank investments. Bank credit has increased at an annual rate of 6.0 per cent since December and at an 8.2 per cent rate since September 1962.

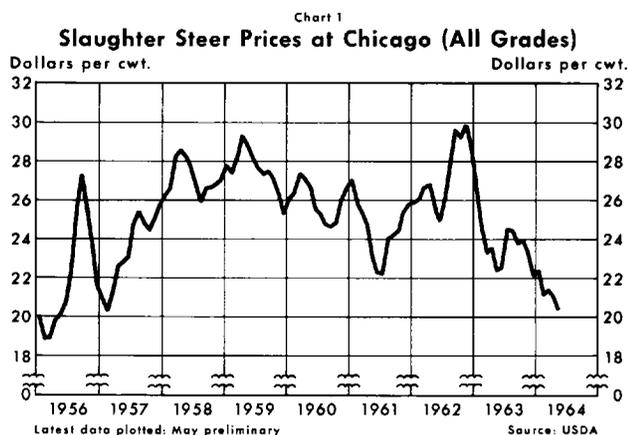
The three-month Treasury bill rate averaged 3.48 per cent in May, a shade under the 3.50 per cent discount rate at which member banks may borrow from Reserve Banks. Since November of last year, the bill rate has fluctuated within a very narrow range around the discount rate. Rates on both 3 to 5 year bonds and those over 10 years have been edging downward



during the last several weeks. However, during 1964 both have been at higher levels than at any other time since 1960.

Beef Cattle Prices

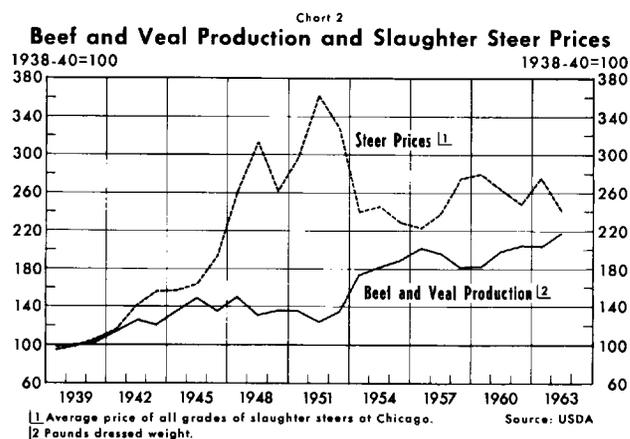
BEEF CATTLE PRICES in the United States have declined sharply since a brief upsurge in the last half of 1962 and have generally trended downward since early 1959. In May, prices averaged slightly less than in April, about 10 per cent less than a year ago, and about 20 per cent below the 1960-62 average. Slaughter steer prices at Chicago averaged about \$20.40 per cwt. in May, compared with \$21.03 in April, \$22.43 in May 1963, and \$27.53 in 1959 (Chart 1).



The average price of about \$20.40 per cwt. for beef steers in May compares with \$10.50 in 1940, and the peaks of \$36.00 in July 1948 and \$37.00 in September 1951. Prices declined rapidly after the 1951 peak and have not approached such a high level since.

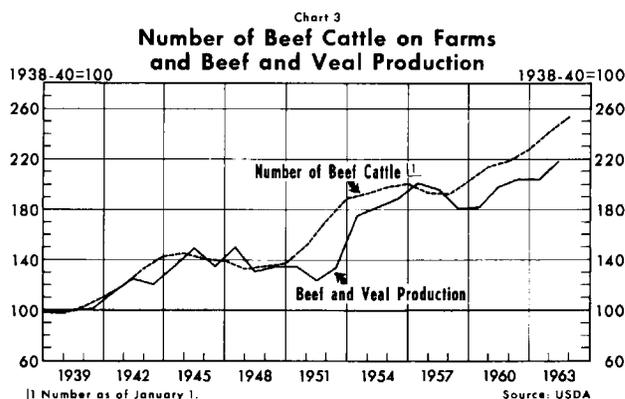
Although numerous factors—the level of personal incomes, prices of substitute meats, imports of cattle and beef, and population changes—have probably contributed to fluctuations in beef cattle prices, variations in domestic beef and veal output have been a major factor underlying most price changes in recent years. In turn, beef and veal output is related to the number of cattle on farms and the typical weight to which cattle are fed before marketing.

With the buildup in demand for beef during World War II, both beef production and cattle prices rose (Chart 2). With the removal of price controls following the war, cattle prices continued upward in step with generally rising prices and personal incomes. Some of the price increase during this period (1945-51), however, can be attributed to a decline of 17 per cent (11.9 to 9.9 billion pounds) in beef and veal output. On a per capita population basis the de-

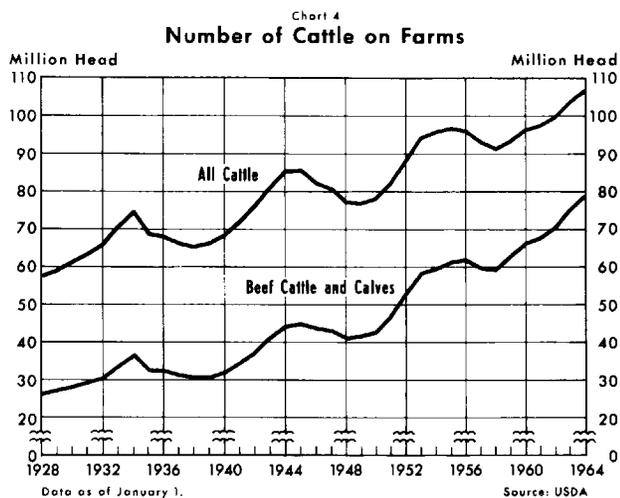


cline was greater—25 per cent (from 85 to 64 pounds). After this inflationary period,¹ changes in cattle prices were even more closely associated with beef and veal output. The price declines from 1951 to 1956 were associated with increased beef and veal production (Chart 2). During this period per capita production rose 49 per cent, and prices declined 38 per cent. Declining output from 1956 to 1958 was accompanied by substantial price increases. Production per capita declined 13 per cent, while prices rose 23 per cent. Fairly stable output and prices prevailed from 1958 to 1959. From 1959 to 1961, however, output rose, and average prices declined. Steer prices strengthened in 1962 as output was about unchanged. In 1963 and early 1964 beef and veal production again turned upward, and prices declined.

These cyclical patterns in beef and veal output can be traced to changes in beef cattle numbers. Since 1958, both beef cattle numbers and beef and veal production have increased substantially (Chart 3).



¹ The BLS Wholesale Price Index of all commodities increased 67 per cent.



Beef cattle numbers rose from 59 million in early 1958 to nearly 80 million in 1964. During this six-year period cattle numbers rose 33 per cent in comparison to a gain in beef and veal output of 20 per cent from 1958 to 1963.

While cattle population and beef production have generally moved together, at cyclical turning points a change in number of cattle is usually accompanied temporarily by a change of beef production in the opposite direction. When cattle numbers begin to increase from a trough, as in 1958, farmers and ranchers are adding to their breeding herds a larger per cent of the female stock and sending fewer animals to feedlots for fattening and ultimate slaughter. Beef and veal production accordingly declines sharply. On the other hand, a decline from the peak in cattle numbers, as in 1956, results in a sizable increase in beef and veal output. At that time, farmers and ranchers marketed a larger than normal proportion of the female stock in addition to normal steer marketings. Despite these exceptions at the turning points of the cattle cycles, beef and veal output has moved generally with the number of cattle on farms.

In recent decades the number of cattle on farms has trended upward in fairly well-defined cycles, averaging about 10 years from trough to trough (Chart 4). Since 1928, there have been three distinct peaks in beef cattle numbers—1934, 1945, and 1956. During these cycles the upswings (periods of increasing cattle numbers) have averaged 6½ years in length, and the downswings have averaged 3½ years. The current upswing has been underway for 6 years. Whether or not we are approaching its end remains to be seen. The first indication of the peak may be heavier than normal marketings of female stock and further pressure on beef and veal prices, especially the prices of lower quality carcasses.

The cattle cycle is perpetuated, at least in part, by factors inherent in the industry. When cattle numbers reach a low point, the number of cattle available for slaughter declines, and per capita beef and veal supplies decrease. This causes beef cattle prices to rise, providing incentive for increased production. Producers reduce sales of breeding stock and retain more heifers for breeding; thus, slaughter and per capita supplies fall even lower. Prices continue to rise, providing further incentive for expansion.

After a buildup in the cow herd, the calf crop increases, and per capita beef and veal supplies rise as more animals are slaughtered. Increased supplies result in lower prices, leading to a reduction in the rate of buildup in cattle numbers. As the rate of buildup declines, cow and heifer slaughter increases, causing a further drop in prices. With less incentive to produce, some herd liquidation occurs, resulting in further pressure on prices. Thus, the downward phase of the cycle of cattle numbers is underway and again terminates when per capita supplies are reduced sufficiently to provide incentive for producers to increase cattle numbers.

SUBSCRIPTIONS to this bank's REVIEW are available to the public without charge, including bulk mailings to banks, business organizations, educational institutions, and others. For information write: Research Department, Federal Reserve Bank of St. Louis, P. O. Box 442, St. Louis, Missouri 63166.