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CORPORATE MERGER ACTIVITY IN THE FOURTH FEDERAL RESERVE DISTRICT, 1950-1967*

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The present wave of mergers represents the third major merger movement in United States economic history. A particular type of merger dominates each of these movements.[1] For example, during the first major period, 1898 to 1902, mergers were largely of a horizontal type that joined firms producing the same or closely related products. During the second major period, 1926-1930, mergers were primarily of a vertical type that merged large firms with suppliers in order to achieve greater economies of scale. The third major merger movement, which began in 1950, has been characterized mainly by the conglomerate type of merger. Moreover, the duration of the movement has been longer and the movement has been marked by a larger number of recorded merger transactions than either of the two earlier periods.

Conglomerate mergers accounted for about 59 percent of recorded "large" mergers[2] during 1948-1953, 61 percent during 1954-1959, 71 percent during 1960-1964, and 78 percent during 1965-1967.[3] Although limited, available data indicate that conglomerate mergers also increasingly dominated the activity of firms merging in the Fourth Federal Reserve District, accounting for about two-thirds of the identified large mergers during the entire period under

[1] See Ralph L. Nelson, *Merger Movements in American Industry, 1895-1956* (Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research, 1959), pp. 5-6.

[2] According to the Federal Trade Commission, large mergers are defined as those involving acquired firms with assets of $10 million or more.

[3] U. S., Congress, Senate, Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary, *Hearings, on S. Res. 40 Economic Concentration*, Part 2, 89th Cong., 1st Sess., 1965, p. 516, and U. S., Federal Trade Commission, *News Release* (March 18, 1968).

review.[4] Within this context, product-extension mergers, i.e., involving firms with complementary products, showed a pronounced upward trend.

Against the background of patterns and trends in the United States, this paper presents some preliminary findings on the characteristics of merger activity in the Fourth District during the period 1950-1967. The analysis should be considered as tentative since further refinements are needed in the basic data.

GENERAL PATTERNS

Table I shows that there were sizable year-to-year variations within the rising trend of merger activity (manufacturing and mining) in both the United States and the Fourth District during 1950-1967.[5] Annual variations in merger activity show a close association with changes in the level of stock prices and little conformity with the pace of business activity (see Table II). For example, the number of recorded mergers in the United States increased markedly in 1955, 1959, and 1961, years when prices of common stocks rose sharply. On the other hand, the number of recorded mergers in the nation declined noticeably in 1957, 1962, and

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[4] U. S., Federal Trade Commission, *Statistical Report Large Mergers in Manufacturing and Mining, 1948-1967* (May 1968). The Fourth Federal Reserve District includes the state of Ohio, the western third of Pennsylvania, the eastern half of Kentucky, and six counties in the northern part of West Virginia.

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[5] Data for 1950-1954 are not strictly comparable with those for 1955-1967. Moreover, 1963 and 1965 data for the Fourth District are probably understated because of incomplete records.

TABLE I

Firms Acquired in Manufacturing and Mining
United States and Fourth District
1950-1967

	United States	Fourth District*
1950	219	24
1951	235	46
1952	288	34
1953	295	34
1954	387	72
1955	782	89
1956	824	94
1957	730	89
1958	737	99
1959	936	101
1960	966	91
1961	1,117	106
1962	1,003	98
1963	985	84
1964	1,065	90
1965	1,125	96e
1966	1,106	139
1967	1,639	165

NOTE: Data for 1950-1954 not strictly comparable to 1955-1967.

e Estimated by the Federal Reserve Bank of Cleveland.

* Based on number of acquisitions by firms headquartered in the Fourth District.

Sources: Federal Trade Commission and Federal Reserve Bank of Cleveland

1966, years in which stock prices fell sharply. The data in Table I also show that the number of mergers in the United States accelerated in 1967, which was a year of rapidly rising stock prices.

The pattern of merger activity in the United States during 1950-1967 was generally replicated in the Fourth District. Although data limitations preclude precise comparisons, both trend and year-to-year variations in merger activity in the Fourth District conformed generally to trend and annual variations in the nation as a whole. Major exceptions to the national pattern were the decline in the number of mergers in the

TABLE II
Percent Change in Selected Data, Annually
1950-1967

	Gross National Product	Stock Prices	Mergers in United States	Mergers in Fourth District
1950	+ 9.62%	+20.81%	+ 73.8%	+ 14.3%
1951	+ 7.90	+21.41	+ 7.3	+ 91.7
1952	+ 3.05	+ 9.66	+ 22.6	— 26.1
1953	+ 4.47	+ 0.93	+ 2.4	–0–
1954	— 1.41	+20.05	+ 31.2	+111.8
1955	+ 7.61	+36.37	+102.1	+ 23.6
1956	+ 1.84	+15.13	+ 5.4	+ 5.6
1957	+ 1.43	— 4.81	— 11.4	— 5.3
1958	— 1.15	+ 4.19	+ 1.0	+ 11.2
1959	+ 6.39	+24.09	+ 27.0	+ 2.0
1960	+ 2.47	— 2.67	+ 3.2	— 9.9
1961	+ 1.94	+18.65	+ 15.6	+ 16.5
1962	+ 6.55	— 5.87	— 10.2	— 7.6
1963	+ 4.00	+12.00	— 1.8	— 14.3
1964	+ 5.46	+16.45	+ 8.1	+ 7.1
1965	+ 6.31	+ 8.35	+ 5.6	+ 6.7
1966	+ 6.36	— 3.31	— 1.7	+ 44.8
1967	+ 2.43	+ 7.82	+ 48.2	+ 18.7

Sources: U. S. Department of Commerce; Federal Trade Commission; Standard & Poor's Corporation; Federal Reserve Bank of Cleveland

Fourth District in 1960, and the increase in 1966. In the case of the latter, the difference from the nation was due to the heavy acquisition programs of several large firms located in the District. As in the nation, 1967 was an exceptionally strong year of merger activity in the District.

ASSET SIZE

Acquiring Firms. As shown in Table III, during the 1950-1967 period, firms with assets under $50 million (including firms whose asset sizes are unknown) dominated the acquiring side of merger activity in the Fourth District, accounting for nearly two-thirds of the total. Of the 1,696 recorded mergers, the asset size of about 9 percent of

the acquiring firms is unknown (presumed to be under $25 million), 21 percent had assets under $10 million, 21 percent had assets of $10 to $25 million, and 13 percent fell in the $25 to $50 million asset size. Except for the $100 to $250 million size class, the data suggest that the *proportion* of acquiring firms in each asset size class decreases as asset size increases. Nevertheless, in 1966-1967, there was a sizable increase in the *number* and *proportion* of acquiring firms in the $1 billion and over asset size class. The asset size pattern of acquiring firms in merger activity in the Fourth District during 1950-1967 was strikingly similar to that in the nation during a comparable time period (see Table III).

TABLE III
Distribution of Classified Mergers by
Asset Size of Acquiring Firms
United States (1955-1967) and
Fourth District (1950-1967)

Asset Size (Mil. of $)	United States 1955-1967		Fourth District 1950-1967	
	Number	Percent	Number	Percent
Under $10	2,764	24.6%	354	20.9%
$10 to $25	3,579	31.9	349	20.6
$25 to $50			220	13.0
$50 to $100	1,278	11.4	186	11.0
$100 to $250			251	14.8
$250 to $499			98	5.8
$500 to $749	2,549	22.7	42	2.5
$750 to $999			10	0.6
$1,000 and over			39	2.3
Unknown*	1,060	9.4	147	8.7
Total	11,230	100.0%	1,696	100.0%

NOTE: Details may not add to totals because of rounding.
* Includes under $1 million or unknown.

Sources: Federal Trade Commission and Federal Reserve Bank of Cleveland

Acquired Firms. Data on asset size are not available for a large preponderance of firms (931 of 1,276) that were acquired in the Fourth District during 1950-1967. It is reasonable to conclude, however, that these firms were for the most part small, privately held companies with assets under $10 million. From data that are available for acquired firms, it is possible to make some comparisons of merger developments in the Fourth District and United States. For example, during 1950-1967, about 61 percent of the acquired firms in the Fourth District for which asset data are available fell in the asset size class below $10 million and about 21 percent fell in the $10 to $25 million size, as shown in Table IV. Except for the $100 to $250 million size class, the proportion of acquired firms in each asset size class decreases as asset class increases. During 1950-1967, the asset size pattern of acquired firms in the Fourth District for which data are available was similar to that in the nation during a comparable time period. The important point seems to be that in both the District and the nation the acquired firms were, on average, considerably smaller in asset size than the acquiring firms.

INDUSTRIES[6]

Acquiring Firms. Firms in six major industries accounted for about two-thirds of all acquisitions by firms headquartered in the Fourth District during 1950-1967, as shown in Table V. The nonelectrical machinery industry, with nearly 18 percent of

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[6] Industry data used in this section are comparable to the data used in Table I.

the acquisitions, led the way, followed in order by fabricated metals, transportation equipment, primary metals, chemicals, and electrical machinery. The dominance of these industries in merger activity in the District is not surprising in view of the fact that they account for a substantial share of the area's economic activity (for example, about 70 percent of the District's manufacturing employment).

Acquired Firms. During the period under review, the heavy goods industries also dominated the acquired side of merger activity in the Fourth District, with durable goods producers representing four of the five industries most actively involved in merger activity in the District. Firms in the nonelectrical machinery industry accounted for one-fifth of acquired firms in the Fourth District during 1950-1967, followed in order by fabricated metal products, primary metals, electrical machinery, and chemicals. Taken together, firms in these five industries accounted for nearly three-fifths of firms acquired during 1950-1967. Within the period, fabricated metals and chemicals accounted for an increasing proportion of firms acquired, while electrical machinery and transportation equipment accounted for a decreasing proportion.

In terms of industry affiliation of both acquiring and acquired firms, the pattern in the Fourth District differed appreciably from the United States. This is not surprising because the industrial composition of any area, in this case the Fourth District, should be reflected in the nature of merger activity in that area. Perhaps more importantly, there is at least presumptive evidence that firms in the Fourth

TABLE IV
Distribution of Classified Mergers by Asset Size of Acquired Firms
United States (1948-1964) and Fourth District (1950-1967)

| Asset Size (Mil. of $) | Large Mergers in the United States 1948-1964 | | Total Mergers in the Fourth District 1950-1967 | | | |
| | | | (Including Unknown Asset Size Class) | | (Excluding Unknown Asset Size Class) | |
	Number	Percent	Number	Percent	Number	Percent
Under $10			209	16.4%	209	60.6%
$10 to $25	442	61.4%	74	5.8	74	21.4
$25 to $50	162	22.5	27	2.1	27	7.8
$50 to $100	80	12	12	0.9	12	3.5
$100 to $250	34	4.7	16	1.3	16	4.6
Over $250	2	0.3	7	0.5	7	2.0
Unknown			931	73.0		
Total	720	100.0%	1,276	100.0%	345	100.0%

NOTE: Details may not add to totals because of rounding.

Sources: Federal Trade Commission and Federal Reserve Bank of Cleveland

TABLE V
Distribution of Classified Mergers by Industry
Fourth District
1950-1967

| SIC Group | Industry | Acquiring Firms | | Acquired Firms | |
		Number	Percent	Number	Percent
10-14	Mining	27	1.8%	8	0.8%
19	Ordnance and accessories	—	—	1	0.1
20	Food and kindred products	26	1.7	48	4.8
21	Tobacco manufactures	2	—	—	—
22	Textile mill products	1	—	13	1.3
23	Apparel and other finished products made from fabrics and similar materials	43	2.8	8	0.8
24	Lumber and wood products, except furniture	16	1.1	6	0.6
25	Furniture and fixtures	18	1.2	14	1.4
26	Paper and allied products	81	5.3	49	4.9
27	Printing, publishing, and allied industries	35	2.3	26	2.6
28	Chemicals and allied products	138	9.1	71	7.1
29	Petroleum refining and related industries	44	2.9	2	0.2
30	Rubber and miscellaneous plastics products	80	5.3	61	6.1
31	Leather and leather products	17	1.1	9	0.9
32	Stone, clay, and glass products	78	5.1	64	6.4
33	Primary metal industries	141	9.3	92	9.2
34	Fabricated metal products, except ordnance, machinery, and transportation equipment	167	11.0	135	13.5
35	Machinery, except electrical	272	17.9	200	20.0
36	Electrical machinery, equipment, and supplies	126	8.3	86	8.6
37	Transportation equipment	152	10.0	53	5.3
38	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks	32	2.1	24	2.4
39	Miscellaneous manufacturing industries	21	1.4	31	3.1
	Total mining and manufacturing	1,517	100.0%	1,001	100.0%

NOTE: Details may not add to totals because of rounding.

TABLE VI
Distribution of Large Manufacturing and Mining Acquisitions by Type
Selected Periods, 1948-1967

United States Type of Merger	1948-1953		1954-1959		1960-1964		1965-1967		1948-1967	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Horizontal	18	31.0%	78	24.8%	42	12.0%	40	11.5%	178	16.7%
Vertical	6	10.3	43	13.7	59	17.0	37	10.6	145	13.5
Conglomerate	34	58.7	193	61.5	247	71.0	272	77.9	746	69.8
Product extension	27	46.6	145	46.2	184	52.9	188	53.9	544	50.9
Market extension	4	6.9	20	6.4	24	6.9	8	2.3	56	5.2
Other	3	5.2	28	8.9	39	11.2	76	21.8	146	13.7
Total	58	100.0%	314	100.0%	348	100.0%	349	100.0%	1,069	100.0%

Fourth District Type of Merger	1950-1953		1954-1959		1960-1964		1965-1967		1950-1967	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Horizontal	1	25.0%	7	23.3%	6	23.1%	3	9.7%	17	18.7%
Vertical	1	25.0	5	16.7	3	11.5	5	16.1	14	15.4
Conglomerate	2	50.0	18	60.0	17	65.4	23	74.2	60	65.9
Product extension	1	25.0	12	40.0	16	61.5	21	67.7	50	54.9
Market extension	—	—	2	6.7	—	—	—	—	2	2.2
Other	1	25.0	4	13.3	1	3.8	2	6.4	8	8.8
Total	4	100.0%	30	100.0%	26	100.0%	31	100.0%	91	100.0%

NOTE: Details may not add to totals because of rounding.

Sources: Federal Trade Commission and Federal Reserve Bank of Cleveland

District, even of the conglomerate type, prefer, where possible, to merge within the same or complementary industries, i.e., to extend product lines. As shown in Table VI, 55 percent of recorded large mergers in the District during 1950-1967 involved product extensions, a situation reasonably similar to that in the nation.

FINANCIAL ASPECTS

To test the feasibility of analyzing the financial aspects of merger activity involving firms located in the Fourth District, a pilot study of mergers consummated in 1967 was undertaken. In 1967, there were 439 companies involved in merger activity in the Fourth District. Sufficient financial data to permit analysis are available for only 197 of these companies, 164 of which were acquiring firms and 33 acquired firms.[7] Most of the 242 companies for which data are not available were acquired companies, which as indicated earlier, were small, privately owned firms.

Among major characteristics of firms analyzed, the information revealed that the acquired companies tended to be small in comparison with the acquiring companies. For example, the mean asset size of acquired

[7] The data, which are from *Moody's Industrial Manual* (June 1967) and *Standard Corporation Descriptions*, are for 1966.

companies was $59.8 million, compared with $188.1 million for acquiring companies.[8] In addition, 85 percent of the firms analyzed turned out to be manufacturing firms, which is not surprising in view of the domination of heavy goods industries in the Fourth District. As shown in Table VII, virtually half of the companies fell in five industry groups: primary metals, fabricated metals, transportation equipment, electrical machinery, and non-electrical machinery. The two machinery groups accounted for nearly one-fourth of the total.

In order to gain some insights into the principal financial characteristics — profitability, financial structure, and capitalization rates—of the merged companies, four relevant financial ratios were computed wherever possible.[9] The ratios are: (1) rate of return on stockholders' equity; (2) the debt-to-equity ratio; (3) the quick-ratio test for liquidity; and (4) the price-earnings ratio. Each ratio was calculated for both acquiring and acquired companies, and the results summarized by the following statistical measures: the mean, median, mode, and standard deviation, and the coefficients of variance, relative skewness, and relative kurtosis. Because many of the distributions were highly skewed and quite peaked, the midpoint of the modal class was used to represent the data.

The statistical results are summarized in Table VIII, from which a number of tentative

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[8] The midpoints of the modal class for acquired and acquiring companies were $12.3 million and $127.9 million, respectively, reflecting the skewness of the respective data.

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[9] See Appendix for formulations of the ratios.

TABLE VII
Merged Companies in the Fourth District by Standard Industrial Codes
1967

SIC Group		Number of Companies
20	Food and kindred products	6
22	Textile mill products	3
23	Apparel and other finished products made from fabrics and similar materials	2
24	Lumber and wood products, except furniture	4
25	Furniture and fixtures	1
26	Paper and allied products	6
27	Printing, publishing, and allied industries	4
28	Chemicals and allied products	13
29	Petroleum refining and related industries	6
30	Rubber and miscellaneous plastics products	6
31	Leather and leather products	6
32	Stone, clay, and glass products	7
33	Primary metal industries	15
34	Fabricated metal products, except ordnance, machinery, and transportation equipment	15
35	Machinery, except electrical	25
36	Electrical machinery, equipment, and supplies	23
37	Transportation equipment	16
38	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks	8
39	Miscellaneous manufacturing industries	2

Nonmanufacturing		
All other Major Groups		29
Total		197

Source: Federal Trade Commission

TABLE VIII
Selected Averages for Merged Companies in the Fourth District*
1967

	Acquiring Companies	Acquired Companies
Rate of return on equity	14.86%	10.31%
Debt-to-equity ratio	33.78	61.11
Liquidity ratio	10.80	25.41
Price-earnings ratio	9.80 times	6.31 times

* Average is the midpoint of the modal class.

Source: Federal Reserve Bank of Cleveland

conclusions can be drawn: acquiring companies were more profitable than acquired companies; acquiring companies were not as highly leveraged or as liquid as acquired companies; and investors placed a higher capitalization rate on acquiring companies than on acquired companies. In the short run, although profitability does not appear to have been the major motive to acquire firms, acquired firms did contribute to increased earnings per share for acquiring firms. The higher debt-to-equity and liquidity ratios of the acquired companies suggest that their financial resources were not being managed as efficiently as those of the acquiring firms. Furthermore, the lower rate of return for acquired companies suggests that they were less efficient than acquiring companies. Apparently, investors adopted this same point of view because the price-earnings ratio for acquired companies was substantially lower than for acquiring companies. The nature of these results suggests that further analysis of this type would be desirable, particularly because of the industrial nature and financial characteristics of firms involved in merger activity in the Fourth District.

CONCLUDING COMMENTS

Expansion through mergers has become an increasingly important source of growth for business firms and appears to be closely associated with changes in the level of stock prices. More than half of the acquiring firms in the Fourth District during 1950-1967 had assets of less than $50 million. On balance, the asset size of firms acquired through merger in the Fourth District during 1950-1967 was small in comparison with the size of acquiring firms. In addition, most of the mergers in the Fourth District involved business firms in the same or complementary line of activity. Available data provide presumptive evidence that acquiring firms were more profitable as well as more efficient than acquired firms. This suggests economies of scale for acquiring firms and improved profitability and efficiency for acquired firms after absorption.

APPENDIX
Formulations of Financial Ratios

π = Net income or loss (after taxes)

T = Income tax rate

A = Total assets

L = Total liabilities

E = Stockholders' equity

PBT = Profit before taxes

I = Interest payments

Profits in any period

$$\pi = (1-T)\ [r+(r-i)\ \frac{L}{E}]\ E$$

where:

$$r = \frac{PBT+I}{A}$$

$$i = \frac{I}{L}$$

$$T = \frac{\text{Income Tax}}{PBT}$$

$\frac{L}{E}$ = debt-to-equity ratio

$$\frac{\pi}{E} = (1-T)\ [r+(r-i)\ \frac{L}{E}] = \text{rate of return on equity}$$

This complex method of deriving $\frac{\pi}{E}$ was used because the equation for π is an identity and served to verify the data.

Other Formulations

$$\text{Liquidity ratio} = \frac{\text{Cash + Government and marketable securities at cost}}{\text{Current liabilities}}$$

$$\text{Price-earnings ratio} = \frac{\text{Price (balance sheet date)}}{\text{Earnings per share}}$$

ECONOMIC PROFILE OF SELECTED STANDARD METROPOLITAN STATISTICAL AREAS IN THE FOURTH DISTRICT

This article provides an economic profile of nine selected Standard Metropolitan Statistical Areas located wholly or partially in the Fourth Federal Reserve District. The areas are: Erie, Pennsylvania; Hamilton-Middletown, Ohio; Huntington-Ashland, West Virginia-Kentucky-Ohio; Johnstown, Pennsylvania; Lima, Ohio; Lorain-Elyria, Ohio; Mansfield, Ohio; Springfield, Ohio; and Steubenville-Weirton, Ohio-West Virginia (see Appendix for definition of each area).

The relatively small urban areas under review[1] are more sensitive than larger areas to industry relocations and technological

changes, mainly because the former tend to be dominated by individual industries. Such sensitivity was especially apparent during the 1950's, when most of these areas underwent considerable economic adjustment. On the other hand, the areas under review generally have participated in the business expansion that began in the nation in 1961.

EMPLOYMENT DISTRIBUTION

In each area, manufacturing is the primary source of employment, followed by wholesale and retail trade, an employment pattern typical of most metropolitan centers. As suggested in Table I, however, the relative importance of the major employment categories varies widely among the respective

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[1] In 1965, the population of the areas ranged from 270,000 in Johnstown to 126,000 in Mansfield.

TABLE I
Percent Distribution of Covered Employment*
United States and Nine Fourth District SMSAs
1967

	Total	Mining	Manufacturing	Contract Construction	Transportation and Public Utilities	Finance, Insurance, and Real Estate	Services	Trade	Other
United States‡	100.0%	1.2%	38.4%	6.3%	6.8%	6.5%	11.0%	25.1%	5.6%§
Erie†	100.0	#	57.6	3.9	5.4	3.6	7.9	21.5	0.1**
Hamilton-Middletown	100.0	#	54.3	11.4	3.3	4.6	6.1	18.8	1.5§
Huntington-Ashland‡	100.0	1.4	46.0	7.0	6.8	4.0	7.8	26.7	0.3**
Johnstown†	100.0	8.9	46.5	3.4	6.4	3.4	9.9	21.3	0.2**
Lima	100.0	#	52.4	5.3	5.4	3.9	6.2	25.1	1.7§
Lorain-Elyria	100.0	#	59.2	4.3	3.4	2.8	7.8	19.2	2.9§
Mansfield	100.0	#	58.9	4.5	4.5	4.1	7.0	19.4	1.6§
Springfield	100.0	#	55.5	4.4	4.9	4.1	8.5	20.6	2.0§
Steubenville-Weirton‡	100.0	2.3	63.2	5.8	5.3	1.6	5.3	15.8	0.7**

* Employment covered by unemployment compensation.
† Data for Pennsylvania are available for the first quarter only.
‡ Data are for 1966.
§ Includes Federal Government.
# Included in "Other."
** Excludes Federal Government.

Sources: U. S. Department of Labor, Bureau of Labor Statistics; Research and Statistics Unit, Kentucky Department of Economic Security; Division of Research and Statistics, Ohio Bureau of Employment Services; Division of Research and Statistics, Pennsylvania Bureau of Employment Security; Research and Statistics Division, West Virginia Department of Employment Security

SMSAs, although in each area the concentration in manufacturing employment is considerably greater than that in the United States as a whole. For example, manufacturing employment in the different areas ranges from 63 percent of total covered employment in the Steubenville-Weirton SMSA to 46 percent in the Huntington-Ashland area.[2] Trade employment tends to be relatively more important in areas where manufacturing is less

[2] Considerable caution must be exercised in generalizing from the information in Table I because covered employment represents only a portion of the total nonagricultural employment of an area. For example, state and local government employment is not reported separately in any area, and Federal Government employment is only reported for a few areas. Consequently, the relative importance of the employment categories indicated in Table I tends to be overstated, particularly manufacturing employment.

dominant, such as in Huntington-Ashland, Lima, and Johnstown.

The dominance of durable goods employment is a characteristic of nearly all Fourth District SMSAs. In fact, durable goods industries account for at least two-thirds of manufacturing employment in each of the nine areas under review, compared with 59 percent in the nation. At the extreme, in the Springfield SMSA, 91 percent of manufacturing employment is concentrated in durable goods industries (see Table II).

The importance of individual manufacturing industries relative to total manufacturing employment in the nine areas is also shown in Table II. The nature of employment concentration in individual industries is in marked contrast to the distribution of manufacturing workers in the nation. The primary metal

TABLE II
Percent Distribution of Manufacturing Employment*
United States and Nine Fourth District SMSAs
1966

	United States‡	Erie‡	Hamilton-Middletown	Huntington-Ashland	Johnstown‡	Lima	Lorain-Elyria	Mansfield	Springfield	Steubenville-Weirton†
Total Manufacturing	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Durable goods	58.6	78.9	68.5	71.2	70.2	77.2	90.3	85.1	90.9	91.4
Lumber and wood products	3.1	0.7	1.7	n.a.	2.1	n.a.	n.a.	0.6	0.8	0.8
Stone, clay, and glass	3.4	0.3	0.9	13.1	2.2	n.a.	1.4	4.3	1.5	n.a.
Primary metals	7.0	10.4	29.5	41.9	50.4	0.3	28.4	9.6	2.3	73.3
Fabricated metals	7.0	13.8	20.4	n.a.	1.5	7.5	14.9	20.7	7.1	3.2
Nonelectrical machinery	9.9	10.7	8.3	3.0	1.7	19.3	5.4	5.0	22.8	0.5
Electrical machinery	9.9	15.5	0.9		0.5	12.4	4.7	31.3	11.1	0.2
Transportation equipment	10.1	14.1	5.1	n.a.	9.7	22.2	33.9	2.8	39.5	0.1
Other durables	8.2	13.4	1.7	13.2	2.1	15.5	1.6	10.8	5.8	13.3
Nondurable goods	41.4	21.1	31.5	28.8	29.8	22.8	9.7	14.9	9.1	8.6
Food and kindred products	9.3	4.4	3.4	5.2	5.7	7.0	1.3	1.8	3.1	1.7
Apparel	7.4	0.4	1.0	5.6	19.9	n.a.	n.a.	n.a.	0.4	0.1
Paper and products	3.5	5.0	23.6	n.a.	0.1	n.a.	n.a.	1.3	0.8	n.a.
Printing and publishing	5.2	2.0	2.1	2.6	1.7	2.5	1.7	3.9	2.9	1.3
Chemicals and allied products	5.0	0.5	n.a.	9.4	0.2	1.7	4.2	0.3	n.a.	n.a.
Rubber and miscellaneous plastics	2.6	8.1	n.a.	n.a.	0.1	0.4	1.8	7.0	n.a.	n.a.
Other nondurables	8.4	0.7	1.4	6.0	2.1	11.2	0.7	0.6	1.9	5.5

n.a. Not available.
* Unless otherwise stated, covered employment used.
† 1960 data from Census of Population.
‡ Nonagricultural employment.

Sources: U. S. Department of Commerce, Bureau of the Census; U. S. Department of Labor, Bureau of Labor Statistics; Division of Research and Statistics, Ohio Bureau of Employment Services; Pennsylvania Department of Internal Affairs

industries, for example, account for about three-fourths of manufacturing employment in the Steubenville-Weirton SMSA, one-half in Johnstown, 42 percent in Huntington-Ashland, and nearly 30 percent in Hamilton-Middletown and Lorain-Elyria. Nationwide, the primary metal industries account for only 7 percent of manufacturing employees.

The transportation equipment industry, which employs 10 percent of the manufacturing workers in the nation, accounts for 40 percent of manufacturing employment in Springfield, over one-third in Lorain-Elyria, over one-fifth in Lima, and about 14 percent

in Erie. In all of the SMSAs, with the exception of Erie and Lima, the two leading durable goods employers account for at least 50 percent of manufacturing employment.

In addition, within the durable goods industries that dominate manufacturing employment, individual companies stand out as the main employers in the areas. For example, in the Erie SMSA, two product divisions of the General Electric Company account for more than 25 percent of manufacturing employment. International Harvester Corporation employs nearly one-third of Springfield's manufacturing workers, while in Johnstown,

Bethlehem Steel Corporation is responsible for about 50 percent of the area's manufacturing employees. While employment concentration, whether in specific industries or companies, is not necessarily adverse to economic growth, it does make an area extremely vulnerable to the impact of changes in specific industries and/or firms.

POPULATION TRENDS

Except for Johnstown, each SMSA under review has had continuous population growth since 1940. (Population in the Johnstown SMSA declined by 28,000 persons between 1940 and 1965.) Absolute and relative gains in population vary widely among the other eight areas (see Chart 1). The Lorain-Elyria SMSA recently experienced the greatest increase in population, with an addition of some 92,000 persons between 1950 and 1965, an increase of 62 percent. Among the other areas under review, the smallest increases in population between 1950 and 1965 occurred in Steubenville-Weirton (12,000 persons or 8 percent) and Huntington-Ashland (13,000 persons or 5 percent).

By definition, population change is the algebraic sum of the difference between the number of births and deaths, and the difference between in- and out-migrations (net migration). Table III presents estimates of net migration for each of the nine areas. Although it is difficult to generalize from net migration data, it is apparent that rapid increases in population are associated with net in-migrations; in contrast, low rates of increase in population, as well as declines, are related to net out-migrations of people. For example, the Lorain-Elyria, Hamilton-Middletown, Lima,

TABLE III
Net Migration Estimates
Nine Fourth District SMSAs
1940-1965

	1940-1950	1950-1960	1960-1965
Erie	+15,000	− 6,000	−11,000
Hamilton-Middletown	+ 7,000	+20,000	− 6,000
Huntington-Ashland	−15,000	−28,000	− 9,000
Johnstown	−43,000	−49,000	−22,000
Lima	+ 5,000	*	+ 1,000
Lorain-Elyria	+20,000	+34,000	+ 4,000
Mansfield	n.a.	+ 4,000	*
Springfield	+ 4,000	+ 2,000	+ 8,000
Steubenville-Weirton	−16,000	−13,000	− 7,000

n.a. Not available.
* Less than 500.

Source: U. S. Department of Commerce

Mansfield, and Springfield SMSAs, where population growth has been fairly rapid, tended to realize net in-migrations of people after 1940. On the other hand, SMSAs with slower rates of increase in population (Erie, Huntington-Ashland, and Steubenville-Weirton) experienced net outflows of people after 1940. The Johnstown SMSA experienced the largest net out-migration from 1940 to 1965 (114,000 persons) and was also the only SMSA to show a decline in population.
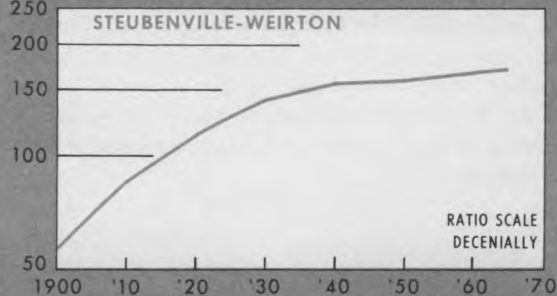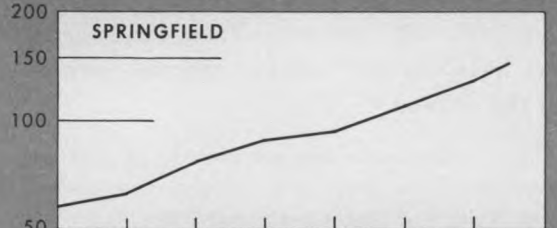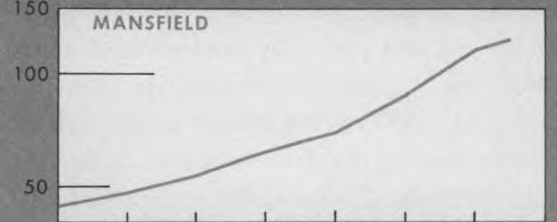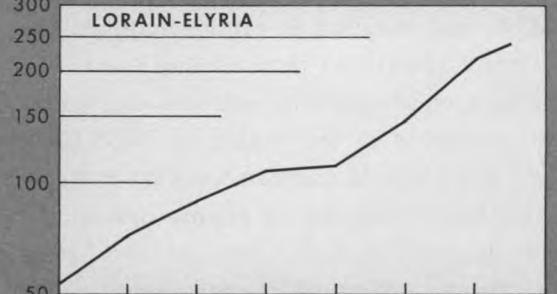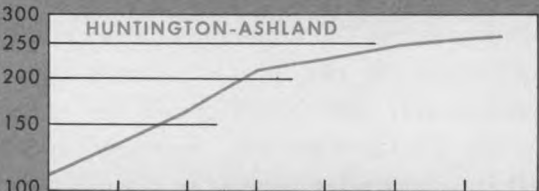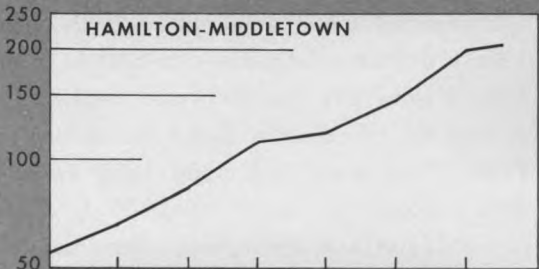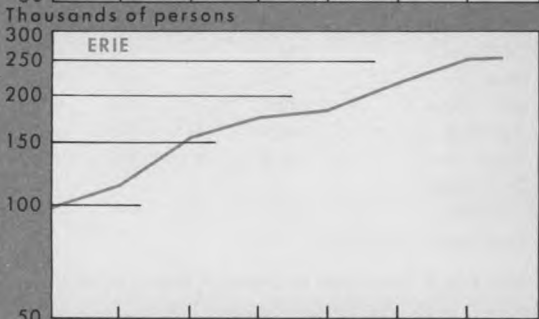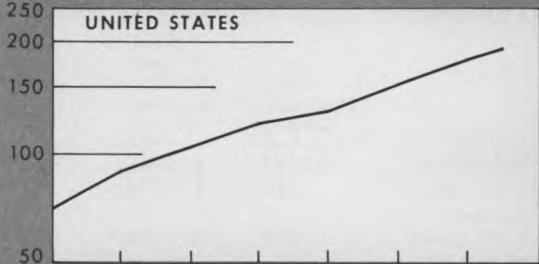
Although people move for many reasons, changes in economic conditions in individual areas are related to large movements of people. Generally speaking, net in-migrations are related to increased job opportunities in an area; net out-migrations are related to labor surpluses and deficiencies in new employment opportunities.[3] Thus, net migration

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[3] Migration estimates for SMSAs can also reflect suburbanization. For example, a portion of the Lorain-Elyria SMSA's population gain from net in-migration is due to suburbanization of residents and workers from the Cleveland area.

Chart 1.

POPULATION GROWTH
United States and Nine Fourth District SMSAs

Millions of persons

UNITED STATES

Thousands of persons

ERIE

HAMILTON-MIDDLETOWN

HUNTINGTON-ASHLAND

JOHNSTOWN

RATIO SCALE
DECENIALLY

Thousands of persons

LIMA

LORAIN-ELYRIA

MANSFIELD

SPRINGFIELD

STEUBENVILLE-WEIRTON

RATIO SCALE
DECENIALLY

1900 '10 '20 '30 '40 '50 '60 '70
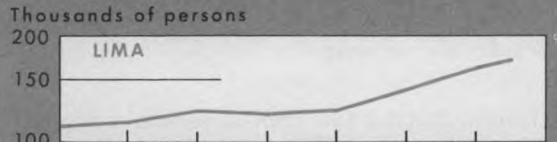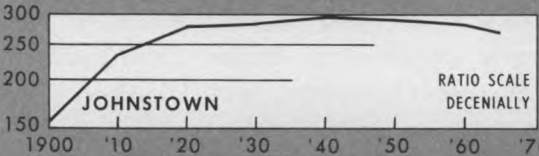
Last entry: 1965

Sources of data: U. S. Department of Commerce, Bureau of the Census; Ohio Department of Health, Division of Vital Statistics; Pennsylvania State Planning Board

estimates suggest that, although the employment distributions of the nine SMSAs are broadly similar, employment conditions vary considerably among the SMSAs.

EMPLOYMENT GROWTH

Trends. During the 1950's, several national trends had a restraining influence on the nine SMSAs and resulted in rather sluggish employment growth in most of the areas. For example, employment growth was affected by the recessions in the nation in 1953-1954 and 1957-1958. In addition, because of major technological changes in mining operations, changing coal markets, a languid steel industry, the relocation of plants, among other reasons, employment growth in the nine SMSAs did not generally resume until after 1961. The sluggishness of economic activity during the 1950's in the SMSAs under review is suggested by the data shown in Table IV. Only the Lorain-Elyria and Hamilton-Middletown SMSAs had average annual rates of change in total nonagricultural employment that were greater than the national average for the decade.[4]

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[4] Bureau of the Census data are given by place of residence rather than place of employment. Consequently, some of the employment increase indicated in the nine SMSAs represents growth in adjacent areas. For example, the Lorain-Elyria SMSA, which is geographically adjacent to Cleveland, had an estimated one-seventh of its employed residents commute to jobs outside of Lorain County in 1960. Estimates of the percent of employed residents commuting to jobs outside of the resident county in 1960 are:

Erie	2.2%	Lima	n.a.
Hamilton-		Lorain-Elyria	14.1%
Middletown	11.3	Mansfield	4.3
Huntington-		Springfield	16.9
Ashland	6.1	Steubenville-	
Johnstown	5.0	Weirton	6.8

Source: U. S. Department of Commerce

TABLE IV
Total Nonagricultural Employment
United States and Nine Fourth District SMSAs
1950-1960

	1960 (Thousands of persons)	Actual Change 1950-1960 (Thousands of persons)	Average Annual Rate of Change 1950-1960
United States	60,289.4	+10,887.7	+2.0%
Erie	84.1	+ 2.0	+0.2
Hamiltown-Middletown	68.7	+ 15.7	+2.6
Huntington-Ashland	78.5	+ 4.3	+0.6
Johnstown	81.8	— 6.0	—0.7
Lima	51.5	+ 6.7	+1.4
Lorain-Elyria	73.5	+ 18.0	+2.8
Mansfield	41.9	+ 7.8	+2.1
Springfield	45.5	+ 4.5	+1.0
Steubenville-Weirton	55.7	+ 0.1	*

* Less than 0.1 percent.

Source: U. S. Department of Commerce, Bureau of the Census

Compared with the sluggish growth of the 1950's, employment in the nine SMSAs in the 1960's generally has shown a marked improvement. Available data,[5] as shown in Table V, indicate that since 1961 employment growth in four areas—Erie, Lima, Lorain-Elyria, and Springfield—has exceeded the average annual rate of increase in the United States. The Huntington-Ashland SMSA improved its rate of employment growth appreciably and outperformed the nation, while the Mansfield area continued to hold at about the same pace as in the nation. Although showing significant improvement over performance during 1950-1960, the Steubenville-Weirton and Johnstown areas

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[5] Data on total nonagricultural employment for each area are available only for those years in which the decennial census is taken. Another data source is required to obtain information on periods of less than a decade.

TABLE V
Total Covered Employment
United States and Nine Fourth District SMSAs
1961 and 1967

	1961	1967	Average Annual Rate of Change 1961-1967
United States	40,020,000	47,631,081‡	+3.5§
Erie*	58,746	73,547	+3.8%
Hamilton-Middletown	44,825	52,149	+2.6
Huntington-Ashland	49,266†	57,996†	+4.2†
Johnstown	48,261	55,564	+2.4
Lima	34,971	43,104	+3.5
Lorain-Elyria	45,096	56,339	+3.8
Mansfield	32,006	39,638	+3.6
Springfield	27,724	34,849	+3.9
Steubenville-Weirton	43,089†	47,626†	+2.5†

* First quarter only.
† Data are for 1962 and 1966.
‡ Data are for 1966.
§ Data are for 1961 and 1966.

Sources: U. S. Department of Labor, Bureau of Labor Statistics; Research and Statistics Unit, Kentucky Department of Economic Security; Division of Research and Statistics, Ohio Bureau of Employment Services; Division of Research and Statistics, Pennsylvania Bureau of Employment Security; Research and Statistics Division, West Virginia Department of Employment Security

have continued to fall considerably below the national rate of advance. Nevertheless, the 2.5 percent annual rate of increase in employment in the Johnstown SMSA during 1961-1967 represents the reversal of a downward trend that began in the 1940's. The forces behind the sluggishness of employment during the 1950's and the growth since 1961 in the nine areas are discussed in the following sections.

Impact of Changes in Coal Mining. Three areas—Johnstown, Steubenville-Weirton, and Huntington-Ashland—sustained employment losses in bituminous coal mining during the 1950's and 1960's because of the combi-

nation of production cutbacks and productivity gains. Fewer workers are required to maintain production schedules, due to increased productivity resulting from technological changes in mining and loading operations. As indicated in Table VI, productivity in coal mining, measured by average tons per man per day, increased 148 percent in the Johnstown area between 1950 and 1966, which was well below the 188-percent increase in the United States. Although productivity in coal mining continues to be greater in the Steubenville-Weirton area than in the nation, productivity in the former area increased at a much slower pace, advancing by 130 percent between 1950 and 1966. Productivity differences largely reflect the types of mining operations that prevail in the respective areas. For example, underground mines predominate in the Johnstown area, while stripping operations account for most of the bituminous coal production in the Steubenville-Weirton SMSA.

After reaching a peak in 1943, consumption of coal produced in the United States declined sharply, resulting in production cutbacks and employment losses in the coal industry (for developments after 1950, see Table VI). Major market losses occurred in railroad fuels, retail and industrial uses, and exports. On the other hand, the electric utilities market became a major source of consumption growth. Currently, electric utilities consume about two-thirds of the coal produced in the districts that include the Johnstown and Steubenville-Weirton SMSAs.

Concurrent production losses and productivity gains in mining resulted in employment losses in the three areas under review.

TABLE VI
Production, Employment, and Productivity in Bituminous Coal Mining
United States and Huntington-Ashland, Johnstown, and Steubenville-Weirton SMSAs
Selected Years, 1950-1966

	Production (net tons, thousands)			
	1950	1955	1960	1966
United States	437,868.0	464,633.4	415,512.3	533,881.2
Huntington-Ashland	1,114.3	965.1	524.4	n.a.
Johnstown	18,733.3	13,985.4	8,762.6	12,238.4
Steubenville-Weirton	7,717.0	5,115.3	3,957.8	5,662.9
	Average Number of Men Working Daily			
United States	433,698	225,093	169,400	131,752
Huntington-Ashland	1,062	569	181	n.a.
Johnstown	20,679	10,967	6,302	4,387
Steubenville-Weirton.	3,874	1,773	1,098	1,014
	Average Tons Per Man Per Day			
United States	6.43	9.84	12.83	18.52
Huntington-Ashland	5.89	9.55	13.85	n.a.
Johnstown	4.90	6.28	8.05	12.16
Steubenville-Weirton.	10.10	13.61	17.13	23.21

n.a. Not available.

Source: U. S. Department of the Interior

For example, in the Johnstown SMSA, employment in bituminous coal mining accounted for about 20,700 jobs in 1950 (24 percent of total nonagricultural employment), in contrast to 6,300 jobs in 1960 and less than 4,400 jobs in 1966. Between 1950 and 1966, the number of jobs in total mining activity in Johnstown was reduced by 77 percent.

Similarly, between 1950 and 1960, mining employment in the Steubenville-Weirton area declined by 2,200 jobs, principally in bituminous coal mining. In the Steubenville-Weirton area, mining employment in 1966 represented less than one-third of the 1950 total (see Table VI). The Huntington-Ashland area experienced a loss of about 900 jobs in the bituminous coal industry in the 1950-1960 period, and mining employment has

continued to fall since that time. In fact, coal mining has all but ceased in the Huntington-Ashland SMSA.

The losses suffered in mining employment produced heavy unemployment in the Huntington-Ashland, Johnstown, and Steubenville-Weirton areas, and, as mentioned earlier, heavy out-migrations from those areas also occurred. At the same time, there was an influx of agricultural workers into the nonagricultural labor force of each of the three areas, which was not accompanied by expansion in major employment sectors, particularly manufacturing. An insufficient number of manufacturing jobs in the Huntington-Ashland, Johnstown, and Steubenville-Weirton SMSAs reflected an inability to attract new production activities as well as

growth problems in existing industries.

Growth in Manufacturing Employment.
Periods of economic slowdown in the nation
and plant closures in individual areas largely
account for the abrupt changes in manu-
facturing employment in the nine areas since
1950 (see Chart 2). For example, severe
manufacturing employment losses in the Erie
and Springfield SMSAs in the middle and
late 1950's and the Hamilton-Middletown
SMSA in the early 1960's occurred as a re-
sult of the combination of the effects of re-
cessions (1953-1954, 1957-1958, and 1960-
1961) and the loss of major employers in each
area. Manufacturing employment in Erie de-
clined in 1954 and 1955 because of the trans-
fer of the General Electric Company's re-
frigerator division to Louisville, Kentucky.
The machinery industries in Erie in 1960 em-
ployed 12,000 less workers than in 1950.
More generally, total manufacturing em-
ployment in Erie dropped 12 percent be-
tween 1950 and 1960.

Similarly, in the Springfield SMSA, nearly
2,000 manufacturing jobs were lost between
1950 and 1960, due largely to the closing of
the Crowell-Collier Publishing Company
plant. The Hamilton-Middletown SMSA lost
four major industry employers in the early
1960's, resulting in the significant drop in
employment shown in Chart 2. Although
manufacturing employment in the Hamilton-
Middletown area began to increase in 1963,
primarily because of expansion programs of
local industries, it has not yet returned to the
levels of the mid-1950's or the early 1960's.

As indicated in Chart 2, growth of manu-
facturing employment in the Lima and Mans-
field SMSAs since 1950 has tended to con-

form more closely to the national pattern
than is the case in the other areas. Thus far in
the 1960's, manufacturing employment sur-
passed previous peak levels in only three of
the eight areas under review—Lima, Mans-
field, and Lorain-Elyria.[6] The continuing de-
cline of employment in the stone, clay, and
glass industry is a major factor in explaining
the shrinkage of manufacturing employment
in the Steubenville-Weirton SMSA. In ad-
dition, the performance of the nation's steel
industry also had a major influence on the
employment situation in Steubenville-Weir-
ton and six of the other SMSAs.

Influence of the Steel Industry. Steel
production and the manufacture of steel mill
products are important sources of employ-
ment in seven of the nine SMSAs under re-
view. As a source of employment, the primary
metal industries (steel) are most important in
Steubenville-Weirton, followed respectively
by Johnstown, Huntington-Ashland, Hamil-
ton-Middletown, Lorain-Elyria, Erie, and Mans-
field (see Table II). Thus, the prospects and
problems of the nation's steel industry affect
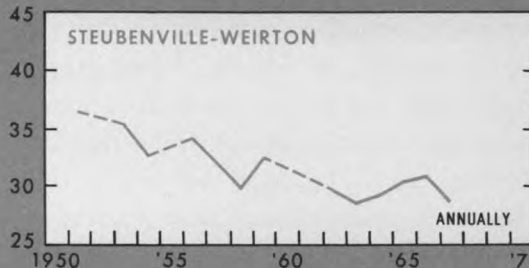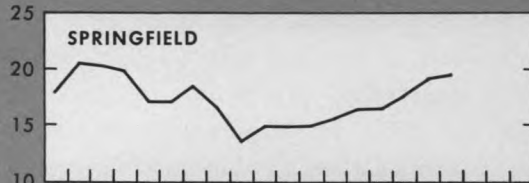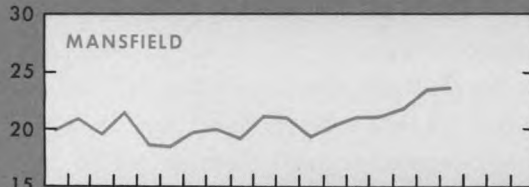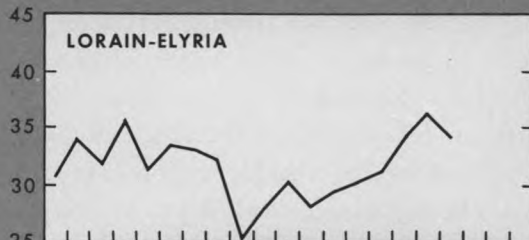considerably these seven urban economies.

During the 1950's, the performance of the
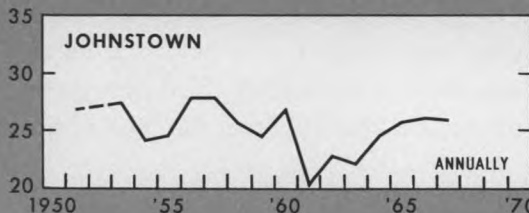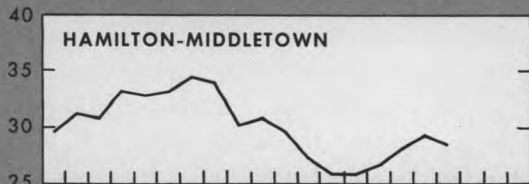steel industry was adversely affected by re-
cessions and three major strikes, and the slow
growth of production was insufficient to
overcome the decline in employment result-
ing from automation.[7] Sluggish gains in
production resulted from the lack of growth

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[6] Lack of comparable data precludes a similar compari-
son for Huntington-Ashland.

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[7] See "Some Perspective on Steel," *Economic Review*,
Federal Reserve Bank of Cleveland, Cleveland, Ohio
(August 1965), pp. 3-11.

Chart 2.
MANUFACTURING EMPLOYMENT
United States and Nine Fourth District SMSAs

Millions of persons — UNITED STATES

Thousands of persons — LIMA

Thousands of persons — ERIE

LORAIN-ELYRIA

HAMILTON-MIDDLETOWN

MANSFIELD

HUNTINGTON-ASHLAND

SPRINGFIELD

JOHNSTOWN

STEUBENVILLE-WEIRTON

ANNUALLY

1950 '55 '60 '65 '70
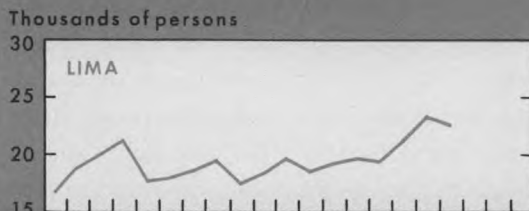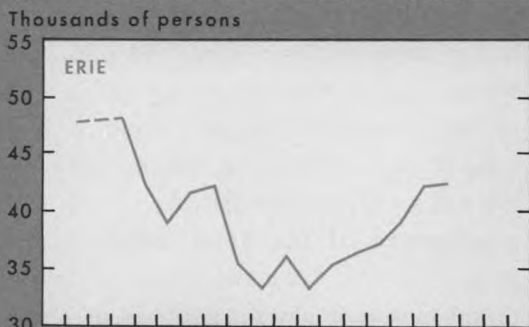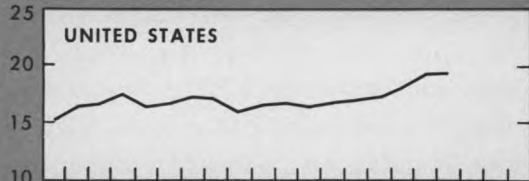
Last entry: 1967

Note: Dashed line indicates lack of data; available data are connected to indicate trend.

Sources of data: U. S. Department of Commerce, Bureau of the Census; Division of Research and Statistics, Ohio Bureau of Employment Services; Division of Research and Statistics, Pennsylvania Bureau of Employment Security; Statistical Abstract of the United States Handbook of Labor Statistics, 1968; Division of Research and Statistics, West Virginia Department of Employment Security

of both domestic steel consumption and United States steel exports. While domestic steel consumption has markedly increased in the 1960's, steel imports have advanced at a more rapid pace and exports have declined.[8] To understand the impact of these developments on the seven SMSAs that are importantly affected, differential growth rates in various steel mill products should be considered.

Steel mill plants are complex facilities that specialize in certain steel mill products. The product specialities of the plants located in each of the seven SMSAs are identified in Table VII; the growth of domestic consumption and imports of these product specialties is shown in Table VIII. From 1956 through 1967,[9] the gains in production and consumption of steel mill products lagged the gain in all manufacturing production in the United States.[10] During the period, total manufacturing production increased at an average annual rate of 4.5 percent, compared with an increase of less than 1 percent for production of steel mill products and 1 percent for domestic steel consumption (net of imports). As shown in Table VIII, since 1956, domestic consumption (net of imports) of 6 of the 11 steel mill products has increased at the same pace or more than the consumption of all steel mill products. The six products

are (based on the increase in actual tonnage consumed): cold-rolled sheets, hot-rolled sheets, galvanized and other coated sheets, plates, wire rods, and tin plate. However, domestic consumption (net of imports) of only one product, galvanized and other coated sheets, has increased at a rate greater than the overall manufacturing index (4.9 percent compared with 4.5 percent). The growth of all of the 11 product markets available to domestic producers was affected by the rise in imports. For example, the small, but positive, increases in consumption of pipes and tubing and bars became net market losses for domestic producers, when the effects of imports are considered. That is, despite the increase in total domestic consumption, the tonnage volume of these products supplied by domestic producers was actually less in 1967 than in 1956, while the tonnage supplied by imports was greater.

The differential rates of growth in product markets affect producers in the seven Fourth District SMSAs listed above. By combining the information in Tables VII and VIII, and assuming that the steel mill plants in these areas are responsive to changes in the respective national product markets, it is apparent that the Hamilton-Middletown, Huntington-Ashland, and Mansfield SMSAs benefited from gains in the markets for the three types of sheet steel identified in Table VIII. The data shown in Table IX suggest that these three areas, especially the Huntington-Ashland SMSA, experienced sizable employment increases in the primary metal industries.

Because of the distribution of steel production among many plants in the nation, it is likely that the remaining areas encountered

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[8] See "United States Trade in Steel," *Economic Review*, Federal Reserve Bank of Cleveland, Cleveland, Ohio (June 1968), pp. 9-22.

[9] Nineteen hundred and fifty-six is the first year for which consistent data are available for the steel mill products listed in Table VIII.

[10] Based on the Federal Reserve Board's industrial production index for manufacturing.

TABLE VII
Major Steel Producers and Principal Products
Seven Fourth District SMSAs
1960*

SMSA	Producer	Principal Products (in order of greatest to least plant capacity)
Erie	Erie Forge and Steel Corp.	Steel forgings Steel castings
Hamilton-Middletown	Armco Steel Corporation	Hot-rolled sheets† Sheets-cold-rolled† Sheets-galvanized Pipes and tubes-Spiralweld Sheets-long terne
Huntington-Ashland	Armco Steel Corporation	Hot-rolled sheets† Sheets-galvanized† Sheets-cold-rolled† Plates-sheared
Johnstown	Bethlehem Steel Company	Bars (other than concrete reinforcement)† Plates-sheared and universal Wire rods Wire products‡ Freight and mine cars Wheels and axles (rolled)
Lorain-Elyria	United States Steel Corporation National Tube Division	Pipe and tubing§ Seamless tube rounds Skelp
Mansfield	Unviersal-Cyclops Steel Corp. Empire-Reeves Steel Corp.	Hot-rolled plates, sheets, and strip† Strip and sheets-cold-rolled Sheets and coils-galvanized Sheets and strips-electrical Sheets-long terne
Steubenville-Weirton	National Steel Corporation Weirton Steel Comp. Div.	Coils for cold reduced black plate and tin plate Tin plate-electrical Sheets-cold-rolled Sheets-galvanized Structural shapes Tin and terne plate-hot dipped Black plate-ordinary
	Wheeling Steel Corporation	Coils for cold reduced black plate and tin plate Sheets-cold-rolled Black plate-ordinary Tin plate-electrolytic Hot-rolled sheets Strip-cold-rolled Sheets-long terne

* Latest year for which information is available.
† The relative importance of this product line may have changed as indicated in the respective company's annual reports since 1960.
‡ Includes plain and galvanized wire, wire nails, and fence posts.
§ Includes buttweld and seamless pipe and tubing and galvanized pipe.

Source: American Iron and Steel Institute

TABLE VIII
Role of Imports in Apparent Consumption of Selected Steel Mill Products in the United States
1956-1967

	Apparent Consumption (thousands of tons)							Imports as a Percent of Apparent Consumption							Average Annual Rate of Change in Apparent Consumption	
																Net of Imports
	1956	1958	1960	1962	1964	1966	1967	1956	1958	1960	1962	1964	1966	1967	1956-1967	1956-1967
All steel mill products	80,239	58,789	71,531	72,639	87,943	99,024	93,667	1.7%	2.9%	4.7%	5.6%	7.3%	10.9%	12.2%	+ 2.1%	+ 1.0%
Sheets-hot-rolled	8,520	6,147	7,961	7,753	9,956	11,995	11,477	0.3	0.4	2.6	1.6	5.3	16.2	19.7	+ 3.8	+ 1.6
Sheets-cold-rolled	12,902	10,009	13,603	13,358	15,905	17,054	16,057	*	*	0.1	0.4	2.6	6.9	8.9	+ 2.7	+ 1.8
Sheets-galvanized and other coated	3,010	2,916	3,356	3,826	4,877	5,806	5,350	*	*	2.8	3.1	3.9	8.7	9.8	+ 5.9	+ 4.9
Black plate	667	516	498	428	399	469	594	0.1	*	3.9	0.9	1.7	2.0	1.7	— 0.3	— 0.5
Pipes and tubing	9,555	6,324	7,338	7,566	8,671	10,025	9,793	1.5	3.2	6.5	8.7	9.1	10.6	10.8	+ 1.7	+ 0.8
Plates	7,467	5,039	6,252	6,298	8,776	9,978	8,912	0.7	0.4	3.4	2.4	5.3	9.5	11.5	+ 3.5	+ 2.3
Wire rods	1,179	1,060	1,316	1,645	2,114	2,504	2,335	5.4	17.1	31.0	39.2	45.1	45.9	46.1	+ 7.3	+ 1.5
Wire products	4,134	3,448	3,493	3,716	3,860	4,319	3,900	6.0	12.5	15.7	17.6	21.0	20.0	20.4	— 0.1	— 1.7
Strip-cold-rolled	1,493	963	1,290	1,431	1,348	1,567	1,358	0.2	0.2	0.3	0.3	1.4	1.4	2.0	+ 0.5	+ 0.4
Bars-other than concrete reinforcement	10,602	6,748	8,556	8,819	10,516	12,008	10,770	2.1	2.6	5.5	4.4	7.2	8.6	10.8	+ 1.3	+ 0.4
Tin plate-hot dipped and electrolytic	4,819	5,100	4,899	5,303	5,359	5,184	5,875	*	*	0.4	1.0	1.5	2.4	2.7	+ 2.1	+ 1.9

* Less than 0.01 percent.

Source: American Iron and Steel Institute

TABLE IX
Percent Change in Employment in the
Primary Metal Industries
United States and Seven Fourth District SMSAs
1950-1960 and 1960-1966

	Percent Change	
	1950-1960*	1960-1966
United States	+ 3.4%	+ 9.3%†
Erie	+ 2.4	+ 7.3†
Hamilton-Middletown	+ 2.2	+11.5‡
Huntington-Ashland	+34.9	+31.7**
Johnstown	+ 3.5	— 2.3†§
Lorain-Elyria	—19.2	+ 1.1‡
Mansfield	+ 6.8	+10.1‡
Steubenville-Weirton	+ 2.7	n.a.

n.a. Not available.

* Bureau of the Census estimates of total employment in the primary metal industries.

† Wage and salary employment.

‡ Covered employment.

§ Includes SIC Industries 33-37.

** Includes SIC Industries 33-34.

Sources: U. S. Department of Commerce, Bureau of the Census; U. S. Department of Labor; Division of Research and Statistics, Ohio Bureau of Employment Services; Division of Research and Statistics, Pennsylvania Bureau of Employment Security

declining or sluggish steel product markets. The employment setbacks in the primary metal industries in the Lorain-Elyria SMSA, for example, reflect the net market loss and production decline of pipes and tubing in that area. The steel industry in Johnstown specializes in bars (other than concrete reinforcement), plates, wire rods, and wire products. While Johnstown has probably benefited from the demands of the Vietnam conflict for plates and wire products, employment in the primary metal industries in 1966 was still below the 1960 level.

The Steubenville-Weirton area produces steel mill products that have experienced differing rates of growth. Principal products in the area include cold-rolled sheets and tin plate, whose markets (net of imports) increased at an average annual rate of 1.8 and 1.9 percent, respectively, during 1956-1967, and black plate, which has experienced a declining national market. (Consumption estimates for the principal product of the steel industry in the Steubenville-Weirton SMSA—coils for reduced black plate and tin plate—are not available.)

Unemployment. Unemployment estimates for the 1950's, if available, would likely indicate that unemployment rates were relatively high in those SMSAs that incurred the loss of a major area employer or experienced the decline of an important industry in the area. Special surveys of selected areas classified three of the nine SMSAs as areas of chronic and persistent unemployment in the late 1950's. For example, at the end of the first quarter of 1959, when the unemployment rate in the nation was at 6.4 percent, the rate was a high 15.4 percent in Erie and a similarly high 15.1 percent in Johnstown;[11] in the Huntington-Ashland SMSA, the unemployment rate was 13.3 percent.[12] The resumption of growth in these areas in the 1960's coupled with the effects of out-migration helped to improve markedly the unemployment situation. As shown in Table X, the unemployment rate in Erie has been below the national average since 1965, after being nearly two and one-half times greater in 1959. Unemployment rates in Johnstown and Huntington-Ashland in 1967, although still greater than the national rate, were reduced to about one-third of 1959 levels.

In the remaining SMSAs, unemployment rates have generally been below the national average since 1965. The upturn in unemployment rates in all nine SMSAs and the leveling of the national rate in 1967 represented a reduced rate of expansion in manufacturing employment in general, especially in the durable goods industries. From 1966 to 1967, manufacturing employment declined in four of the SMSAs (see Chart 2).[13]

Summary. The specialized industrial and product mixes of economic activity in the nine SMSAs have produced differing reactions to technological change, geographical shifts in production and markets, and weakened demands in certain national product

[11] U. S. Department of Labor, *Chronic Labor Surplus Areas: Experience and Outlook*, July 1959.

[12] George Iden, "Industrial Growth in Areas of Chronic Unemployment," *Monthly Labor Review*, LXXXIX (1966), pp. 485-490.

[13] In part, the different changes in the unemployment rates of the nine SMSAs and the United States from 1966 to 1967 reflect different methods of estimation.

TABLE X
Rate of Unemployment as a Percent of Civilian Labor Force
United States and Nine Fourth District SMSAs
1960-1967

	1960	1961	1962	1963	1964	1965	1966	1967
United States	5.5%	6.7%	5.5%	5.7%	5.2%	4.5%	3.8%	3.8%
Erie	9.3	10.4	7.8	7.7	5.8	4.1	2.9	3.6
Hamilton-Middletown	6.9	9.1	8.0	7.5	6.0	4.5	3.5	3.9
Huntington-Ashland	12.1	12.3	10.7	9.0	7.9	6.5	4.8	5.2
Johnstown	12.9	18.2	15.1	10.6	7.1	5.7	4.6	5.3
Lima*	n.a.	n.a.	n.a.	n.a.	n.a.	2.9	2.9	4.8
Lorain-Elyria	7.1	8.9	6.5	6.0	5.0	3.9	3.6	4.1
Mansfield*	n.a.	n.a.	n.a.	n.a.	n.a.	3.3	2.8	4.1
Springfield*	n.a.	n.a.	n.a.	n.a.	n.a.	3.1	2.8	3.3
Steubenville-Weirton	6.1	6.9	6.6	6.4	3.9	3.6	3.4	4.0

n.a. Not available.
* Estimated by Federal Reserve Bank of Cleveland.

Sources: U. S. Department of Labor; Division of Research and Statistics, Ohio Bureau of Employment Services; Division of Research and Statistics, Pennsylvania Bureau of Employment Security

markets. Major changes in all facets of the coal industry plus specialization in industries whose products encountered weak national demand resulted in major economic adjustment problems in Johnstown, Steubenville-Weirton, and Huntington-Ashland. While Johnstown recently registered employment gains after more than two decades of decline, the Steubenville-Weirton area tended to balance out employment gains and losses during the 1950's and has not yet evidenced sustained employment growth. Reaction in the Huntington-Ashland area was less severe, as both coal mining and manufacturing are less dominant in the employment structure of the area than in Johnstown and Steubenville-Weirton. In addition, the products of the primary metal industries in the Huntington-Ashland SMSA have not suffered from weakened demand to the same extent as Johnstown and Steubenville-Weirton. However, the relatively high unemployment rates in the Huntington-Ashland area in recent years suggest that out-migrations and expanding industrial production were insufficient to overcome employment losses in the 1950's and the continuing growth of the labor force.

Three SMSAs labored under the loss of major area employers. Erie lost major machinery producers and experienced a demise of activities in connection with shipping on the Great Lakes. Nevertheless, although employment has not returned to the levels of the early 1950's, Erie is now experiencing relatively rapid growth and correspondingly lower rates of unemployment. Springfield, too, recouped employment losses resulting from plant closures, and recent expansion in the transportation equipment industry represents a primary source of growth in that area. In the Hamilton-Middletown area, a combination of people leaving the area and expansion in existing firms has improved the unemployment situation; in fact, the Hamilton-Middletown SMSA has now recovered from most of its earlier employment loss.

Three metropolitan areas, Lima, Lorain-Elyria, and Mansfield, have experienced more consistent patterns of growth. Other than interruptions that coincided with national business recessions, employment growth has been reasonably steady in the three areas since 1950. Employment setbacks in the primary metal industries in Lorain-Elyria were more than compensated for by other types of industrial expansion in the area.

SELECTED MEASURES OF ECONOMIC ACTIVITY

Value Added. One measure of the importance of manufacturing in the nine metropolitan areas is value added by manufacturing. Differences in value added among the areas reflect differences in industrial and product mixes, volume of goods produced, and the degree of capital intensity involved

in the production activities in the respective areas. Among the nine areas, value added by manufacture in 1965 was highest in the Lorain-Elyria SMSA and lowest in the Springfield area (see Table XI). During the 1960-1965 period, Huntington-Ashland, Johnstown, and Erie showed the largest percent increases in value added, considerably above the national average.

Differences in labor productivity are suggested by the variation in value added per employee in the nine SMSAs. As a measure of labor productivity, value added per employee in 1965 was highest in Lorain-Elyria and the lowest in Johnstown. High value added in Lorain-Elyria is due in part to the importance of the area's transportation equipment and primary metal industries, two of the most capital intensive industries in the United States. The comparatively low value added

TABLE XI
Value Added by Manufacture
United States and Nine Fourth District SMSAs
1965 and Percent Change 1960-1965

	1965 (mil. of $)	Percent Change 1960-1965	Value Added Per Employee 1965 Dollars	Percent Change 1960-1965
United States.	$225,366	+ 37.4%	$12,477	+ 22.9%
Erie.	518	+ 44.5	13,248	+ 33.2
Hamilton-Middletown	446	+ 20.3	15,872	+ 26.6
Huntington-Ashland	360	+ 51.8	14,063	+ 23.8†
Johnstown	283	+ 45.5	11,012	+ 51.3
Lima*	253	+ 10.9	16,013	+ 9.6
Lorain-Elyria	642	+ 31.4	18,772	+ 16.2
Mansfield	345	+ 38.2	15,899	+ 32.9
Springfield.	214	+ 40.7	12,229	+ 19.1
Steubenville-Weirton.	483	+ 24.9	15,581	+ 18.1†

* Data are for Allen County, Ohio.

† Data are for 1962-1965.

Sources: U. S. Department of Commerce; Division of Research and Statistics, Ohio Bureau of Employment Services; Division of Research and Statistics, Pennsylvania Bureau of Employment Security; Research and Statistics Division, West Virginia Department of Employment Security

TABLE XII
Capital Expenditures (New) by Manufacturers
United States and Nine Fourth District SMSAs

	Annual Average 1958-1961 (mil. of $)	1963 (mil. of $)	1964 (mil. of $)	1965 (mil. of $)
United States.	$9,460	$11,370.9	$13,263.3	$16,354.2
Erie.	18.2	18.2	19.9	29.9
Hamilton-Middletown	34.3	16.5	31.8	26.0
Huntington-Ashland	25.2	105.7	43.0	41.1
Johnstown	12.6	19.7	11.9	17.0
Lima	10.8	13.8	8.6*	25.1*
Lorain-Elyria	23.9	25.7	29.5	34.7
Mansfield	15.2	20.1	18.9	26.2
Springfield.	n.a.	5.5	5.2	9.4
Steubenville-Weirton.	30.0	58.6	110.0	108.5

n.a. Not available.
* Data are for Allen County, Ohio.

Source: U. S. Department of Commerce

per employee in Johnstown is associated with the apparel industry in the area — an industry that nationally is characterized by low value added per employee — and the employment practices of manufacturers in the area. Employment in manufacturing in Johnstown was supported by a reduction in the number of average weekly hours worked per employee, a policy that helped to alleviate the unemployment problem in the area by allowing more people to work. However, a reduction in average weekly hours probably has a negative influence on value added per employee.

Nevertheless, in terms of value added per employee during 1960-1965, the Johnstown SMSA showed the greatest gain, reflecting in part an increase in the average hourly workweek over the period as a whole despite the reduction in hours referred to earlier. Even so, the average hourly workweek in Johnstown is below that in the nation as a

whole.[14] Erie and Mansfield also showed rates of increase considerably greater than for the nation as a whole. In contrast, in four areas — Springfield, Steubenville-Weirton, Lorain-Elyria, and Lima—the percent changes in value added per employee from 1960 to 1965 were below the national rate.

New Capital Expenditures. Significant increases were made in expenditures for new plant and equipment in the Steubenville-Weirton SMSA during 1963-1965 (see Table XII). In fact, the four-year average of new capital expenditures during 1962-1965 in the Steubenville-Weirton SMSA (not shown in table) was more than two and one-half times greater than the average for the four preceding years and largely represented new technology and additional capacity in the primary

[14] The average hourly workweek in all manufacturing in Johnstown was 37.0 hours in 1960 and 38.1 hours in 1965, compared with 39.7 hours in 1960 and 41.2 hours in 1965 for the United States as a whole.

metal industries in the area. New capital expenditures in all nine areas, except the Hamilton-Middletown SMSA, were greater in 1965 than the respective annual averages during 1958-1961.

Average Weekly Earnings. Average weekly earnings of manufacturing workers in all nine SMSAs exceeded the national average in 1967 (see Table XIII). The comparatively high levels of earnings reflect the heavy concentration of workers in durable goods industries in each of the SMSAs. As discussed earlier, a shortened workweek and the influence of the apparel industry exert a downward bias on earnings in Johnstown. Only in the Springfield SMSA was the percent change in average weekly earnings from 1961 to 1967 greater

than the change in the nation. (The performance of the other SMSAs of course reflects in part the higher starting base in those areas in 1961.)

New Car Registrations. The behavior of new car registrations is one indicator of consumer spending in a local area. In 1967, the number of new car registrations in the areas under review was greatest in the Erie SMSA (see Table XIV). The Johnstown area also registered over 10,000 new cars in 1967. From 1961 to 1967, the Hamilton-Middletown SMSA experienced the greatest percent increase in new car registrations of the nine areas under review, and only the Hamilton-Middletown and Springfield areas exceeded the percent increase in the nation.

Residential Construction. Trends in the dollar value of residential construction contracts provide some additional insights into the economic performance of the nine areas under review. As shown in Chart 3, residential construction in the United States has

TABLE XIII
Average Weekly Earnings of
Covered Workers in Manufacturing
United States and Nine Fourth District SMSAs
1967 and Percent Change 1961-1967

	Average Weekly Earnings 1967	Percent Change 1961-1967
United States	$114.90	+24.4%
Erie	130.21*	+21.8
Hamilton-Middletown	160.43	+18.1
Huntington-Ashland	132.47†	+14.5‡
Johnstown	115.90*	+17.5
Lima	135.44	+19.5
Lorain-Elyria	150.55	+15.6
Mansfield	140.71	+17.6
Springfield	139.03	+26.6
Steubenville-Weirton	154.40†	+13.2‡

* First quarter only.
† 1966.
‡ Percent change 1962-1966.

Sources: U. S. Department of Labor; Research and Statistics Unit, Kentucky Bureau of Economic Security; Division of Research and Statistics, Ohio Bureau of Employment Services; Division of Research and Statistics, Pennsylvania Bureau of Employment Security; Research and Statistics Division, West Virginia Department of Employment Security

TABLE XIV
New Car Registrations
United States and Nine Fourth District SMSAs
1961 and 1967 and Percent Change 1961-1967

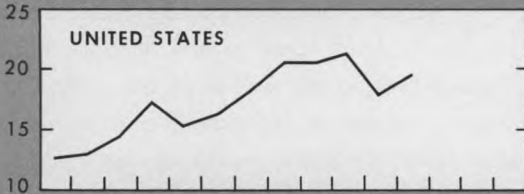|	Number of Cars		Percent Change 1961-1967
	1961	1967	
United States	5,854,747	8,267,129	+41.2%
Erie	8,398	11,591	+38.0
Hamilton-Middletown	5,869	8,589	+46.3
Huntington-Ashland	6,164	8,594	+39.4
Johnstown	7,186	10,138	+41.1
Lima	5,087	6,962	+36.9
Lorain-Elyria	6,919	9,726	+40.6
Mansfield	4,528	5,549	+22.5
Springfield	4,558	6,561	+43.9
Steubenville-Weirton	4,838	6,197	+28.1

Source: R. L. Polk & Co. Further use of these data without the express permission of R. L. Polk & Co. is forbidden.
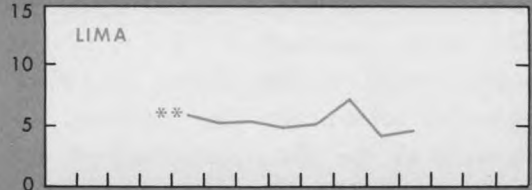
Chart 3.

VALUE of RESIDENTIAL CONSTRUCTION CONTRACTS
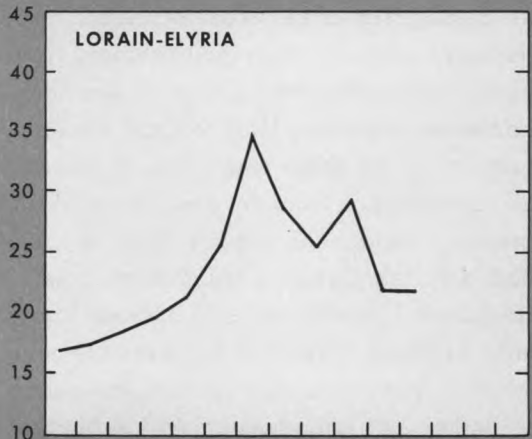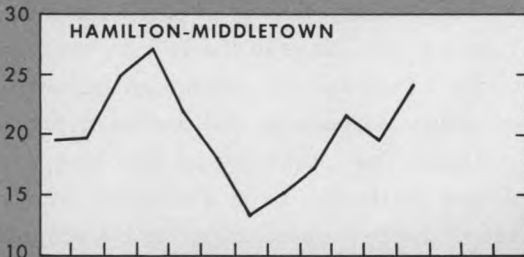United States and Eight* Fourth District SMSAs

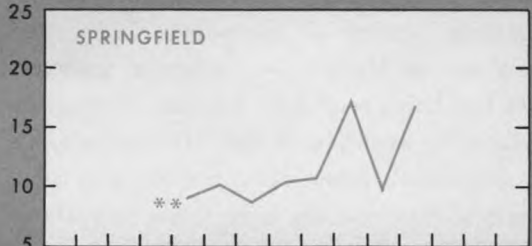Billions of dollars

UNITED STATES

Millions of dollars

LIMA

Millions of dollars

ERIE

LORAIN-ELYRIA

HAMILTON-MIDDLETOWN

HUNTINGTON-ASHLAND

SPRINGFIELD

JOHNSTOWN
ANNUALLY

STEUBENVILLE-WEIRTON
ANNUALLY

1956 '58 '60 '62 '64 '66 '68 '70

1956 '58 '60 '62 '64 '66 '68 '70
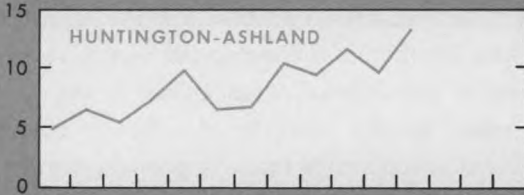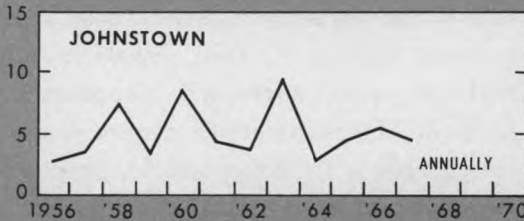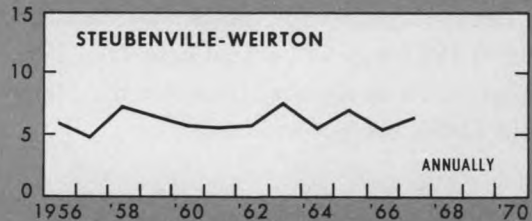
Last entry: 1967
* Data for Mansfield SMSA are not available.
** Not available.
Source of data: F.W. Dodge Division, McGraw-Hill Information Systems Company

increased fairly substantially since 1957, despite sluggishness in 1966 and 1967. Among the nine SMSAs, Erie showed the sharpest increase in residential construction, with the dollar value of contracts in 1967 more than double the 1960 volume. During the 1960's, residential construction also increased appreciably in the Huntington-Ashland and Springfield SMSAs. The sharp advances in the Springfield area are associated with apartment and dormitory construction. Residential construction declined in the Hamilton-Middletown area from 1959 to 1962, the same period in which there was a loss of industry and out-migration from the area. Since 1962, however, residential construction has expanded in the Hamilton-Middletown area.

Residential construction in the Lorain-Elyria SMSA has been influenced by several factors, including apartment construction, expanding population and employment, and suburbanization of Cleveland area residents. In the remaining areas — Johnstown, Lima, and Steubenville-Weirton — residential construction has been relatively sluggish during the 1960's. For example, in 1967, the dollar value of residential construction contracts in Steubenville-Weirton was only 9 percent above the 1960 level and was virtually unchanged in Lima. In Johnstown, residential construction in 1967 was 47 percent below the 1960 dollar value of awards. (Data for the Mansfield SMSA are not available.)

CONCLUDING COMMENTS

Earlier studies of the largest metropolitan areas in the Fourth District revealed an intense concentration of manufacturing activity

in general and durable goods production in particular in those areas. The present article reveals an even greater dependence on durable goods production in nine other SMSAs in the District than in the largest Fourth District SMSAs, as well as in the nation as a whole. Moreover, economic activity in the nine SMSAs tends to be dominated by one or two industries and single major producing firms.

A brief review of a number of economic indicators shows that since 1950 the nine areas under review have experienced periods of economic adjustment as well as periods of economic expansion. In several areas, the problems of adjustment, in part a response to business conditions in the nation, were seriously influenced by changing technology, company relocations, and declining product markets. The resiliency of the nine areas differs markedly, as is evidenced by their respective performances during the economic expansion that began in 1961.

The adjustment problems of the Johnstown and Steubenville-Weirton SMSAs have been more pronounced than those of the other areas, largely because of a heavy commitment to industries that are growing slowly in the nation. Both the Johnstown and Steubenville-Weirton areas have thus far been unable to recast significantly their respective industrial and product mixes, which appears to be necessary if those areas are to achieve growth comparable to the other SMSAs. Despite the recent loss of large industrial employers, the Hamilton-Middletown area has experienced employment and population growth during the 1960's.

In the other six SMSAs, economic expansion

(including employment, population, and other measures) is being achieved either through an intensification of the activities of the industries that are expanding nationally and are already located in the areas, or through a broadening of the industrial mix. As a case in point, new capacity in the transportation equipment industry has been a major impetus to growth in the Lorain-Elyria and Springfield SMSAs since 1960. The areas that appear to have been able to maintain economic growth at or above the national rate of expansion are: Erie, Huntington-Ashland, Lima, Mansfield, Lorain-Elyria, and Springfield.

APPENDIX

Definitions of Nine Fourth District SMSAs

SMSA	Population 1965	Counties
Erie, Pennsylvania	255,000	Erie County
Hamilton-Middletown, Ohio	208,000	Butler County
Huntington-Ashland, West Virginia-Kentucky-Ohio	259,000	Cabell and Wayne counties, West Virginia; Boyd County, Kentucky; Lawernce County, Ohio
Johnstown, Pennsylvania	270,000	Cambria and Somerset counties
Lima, Ohio	171,000	Allen, Putnam, and Van Wert counties
Lorain-Elyria, Ohio	240,000	Lorain County
Mansfield, Ohio	126,000	Richland County
Springfield, Ohio	147,000	Clark County
Steubenville-Weirton, Ohio-West Virginia	170,000	Jefferson County, Ohio; Brooke and Hancock counties, West Virginia

Sources: Bureau of the Budget and U. S. Department of Commerce

KENTUCKY
OHIO
PENNSYLVANIA
WEST
VIRGINIA

Fourth Federal Reserve District