

economic review

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FEDERAL RESERVE BANK OF CLEVELAND

TRENDS IN PRICES, PRODUCTION, AND INVENTORIES

The nation's economic activity in the first half of 1967 failed to advance as rapidly as in recent years. In the first quarter of 1967, real economic activity (real Gross National Product) deteriorated slightly; in the second quarter, real activity increased only modestly. After hesitating in late 1966, industrial production declined in the first quarter of 1967, and continued to decline during the second quarter, although at only half the rate of the first quarter.

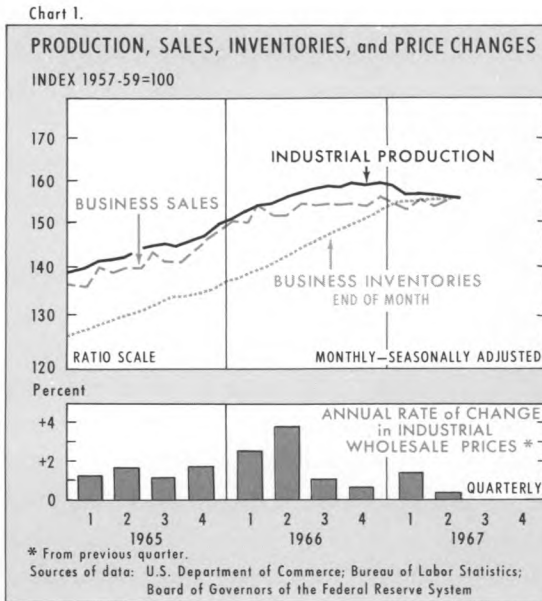
At this juncture, there is widespread sentiment that economic activity is in the process of gaining momentum, and will begin to surge by the fourth quarter. This may indeed be the case. If so, the pace and tone of economic activity at the present time (the third quarter) will provide the foundation for the surge that is widely anticipated to lie ahead. Since the behavior of industrial production, industrial prices, and inventory-sales relationships is a major influence on economic activity, it seems particularly relevant to review these areas at this time.

BACKGROUND

An overview of pertinent economic series is presented in Chart 1.¹ As shown in the bottom panel of the chart, increases in industrial prices began to accelerate during the fourth quarter of 1965. At that time, the growth of both industrial production and business sales was reinforced by the highest sustained rate of inventory accumulation since the Korean War. By the second quarter of 1966, prices were rising at the fastest rate in a decade — generally the result of excess demand impinging on the limitations of supply.

Industrial production continued to increase though mid-1966. The pace of business sales, however, began to slacken during the second

¹ The series in the top panel of Chart 1 are on an index basis for the purpose of comparison. Total business sales and total business inventories (book value) are measured in *current dollars*, while the Federal Reserve Board's index of industrial production is measured in *physical terms*. Both the business inventories and sales series include the manufacturing, wholesale, and retail sectors.



quarter; at the same time, the rate of inventory accumulation was stepped up. The leveling of business sales during the second half of 1966, together with an even higher rate of inventory accumulation (much of which was involuntary), set the stage for a cresting of industrial production in the late months of the year. Meanwhile, as demand pressures eased and supply bottlenecks were alleviated, the rate of price increase subsided markedly.

During the first half of 1967, business sales remained on a stubborn plateau, the rate of inventory accumulation slackened, and industrial production declined. Much of the decline in output was due to a sharply reduced rate of inventory building by manufacturers and to sizable inventory liquidation by wholesalers and retailers. A brief flurry of price increases occurred during the first quarter of 1967, despite the fact that the economy was experiencing the first setback in the for-

ward momentum of real economic activity since the 1960-1961 recession.

Against this background, a discussion of the behavior of key industrial series, classified by market groupings, reveals a number of important interrelationships.

INDUSTRIAL PRICES

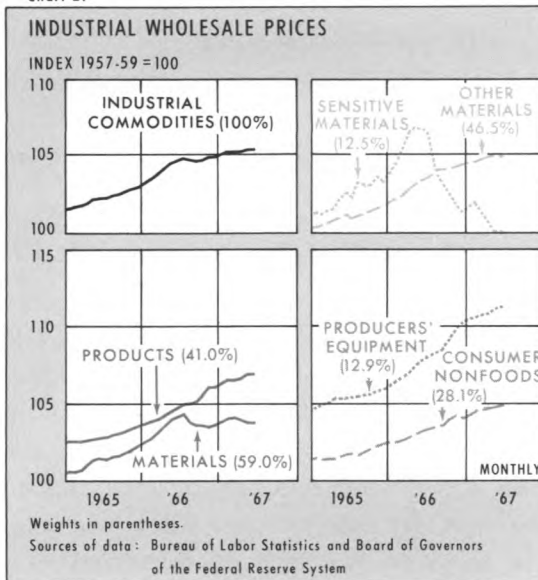
The recent behavior of industrial wholesale prices and the major market groupings is presented in Chart 2. As shown in the upper left panel of the chart, the particularly sharp upswing in industrial prices during the first half of 1966 was followed by little change between July and December. After December, the index of industrial prices moved to a moderately higher level.

The nature and extent of price pressures in the industrial sector can be seen by a separation of industrial commodities into materials and products (see Chart 2).² Generally, prices of industrial materials respond more readily to changes in supply and demand than do prices of industrial products. Thus, as demand pressures eased during the latter part of 1966 and supply conditions improved, prices of materials began to decline. Because the weight of materials is greater than products in the total industrial price index (the respective weights are shown in the parentheses in the chart), declines in prices of materials virtually offset continued increases in prices of products.

² Industrial materials, which include fuels and power, are used in the production of both producers' equipment and consumer nonfood goods. Industrial products are finished goods for ultimate use as producers' equipment or as consumer nonfood goods.

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Chart 2.



As shown in the upper right panel of Chart 2, the reversal of the advance in materials prices in the second half of 1966 was entirely the result of a steep decline in the sensitive materials group. The group is composed of materials such as hides and skins, textiles and fibers, lumber, and nonferrous metals. These materials are included primarily because of their price responsiveness to changes in market conditions. Given the relatively inflexible supply characteristics of sensitive materials during the short-run, market shortages quickly elicit higher prices, which in turn induce expansion of supplies that eventually relieve price pressures. Rapid or prolonged increases in prices of sensitive industrial materials tend to reflect increasing pressures on capacity to produce other materials. Conversely, weakening in prices of sensitive industrial materials tends to reflect declining rates of capacity utilization.

The price index for other industrial materials includes items such as steel mill products, glass, concrete, and chemicals, which generally involve more fabrication than do sensitive materials. For almost four years prior to 1965, prices of nonsensitive industrial materials were virtually stable, while prices of sensitive industrial materials underwent alternating periods of strength and weakness. Prices of nonsensitive materials firmed moderately during 1965, gained momentum in the latter part of the year, and then accelerated in 1966. As in the past, the acceleration of nonsensitive materials prices during 1966 characterized a situation in which output was pressing against capacity, gains in labor productivity were slowing, and costs generally were rising. In that type of economic climate, it is not surprising that inflationary pressures on prices of finished goods also intensified.

Price increases for producers' equipment also accelerated during 1966 as outlays for producers' goods rose at a rapid rate. Historically, the price index for producers' equipment has behaved in a ratchet-like manner — rising when investment demand is strong, but at best only leveling off when capital spending is weak and prices of materials may be declining. Thus, the reduction in capital spending since the fourth quarter of 1966 only served to moderate the price rise in this group. It appears that as demand pressures eased in 1967, cost-push influences came to the fore.

In addition, increases in wholesale prices of consumer nonfoods accelerated during 1966, despite the sluggish pace of retail sales beginning in the spring. The price rise in this group appears to have resulted more from

the influence of cost-push than demand-pull factors, since there was little demand pressure through much of 1966. Thus far in 1967, there has been little abatement of the rise in prices of consumer nonfoods, in contrast to the price moderation that has occurred in materials and in producers' equipment.

INDUSTRIAL PRODUCTION

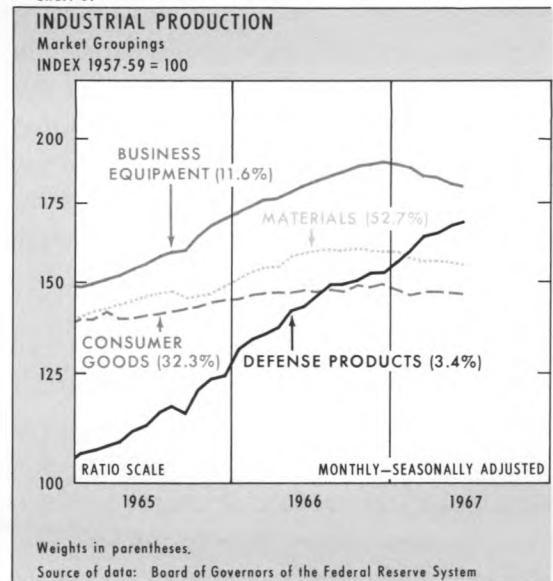
The market groupings of industrial production in Chart 3 are roughly comparable to the market groupings of industrial wholesale prices shown in Chart 2.³ Output of consumer goods was on a plateau for most of 1966, reflecting the sluggish pace of retail trade. The increase in consumer goods output in the fourth quarter was mainly the result of a larger volume of auto assemblies, which was followed by a sharp cutback in production in the first quarter of 1967 to reduce excessive dealers' stocks. An improvement in auto production during the second quarter helped to limit the net decline in consumer goods output between December and June. Production of home goods and apparel, which began to weaken in the summer of 1966, underwent further cutbacks in 1967 as inventories were adjusted. Meanwhile, output of consumer

³ The series on defense products is not comparable since there is no special price index, nor is consumer goods output, which includes processed foods. The defense group in industrial production covers only the output of military aircraft, ordnance plants, and navy shipyards. The other market categories include much additional output that is directly or indirectly related to military requirements. The behavior of the index for defense products, therefore, is only an approximate measure of the rise in defense production during recent years. The remaining market groups of materials, business equipment, and consumer goods each contributed to the decline in non-defense industrial production during the first half of 1967.

staples such as food, beverages, tobacco, drugs, and toiletries continued to rise in 1967. There is some indication that the production index for consumer goods is poised for an upturn, as a number of previously declining categories appear to have leveled off. In addition, auto assemblies are currently providing a boost to consumer goods output, with auto companies building new models earlier than usual, and at a rapid pace, in anticipation of a possible strike this fall.

Production of materials peaked in October 1966, and the decline through June was largely due to the behavior of durable goods materials (roughly half of total materials). Output of nondurable materials, which includes business fuels and power, eased only slightly after January. Within the durable goods portion, there were divergent and partially offsetting trends. Output of construction materials peaked as early as March 1966 and then declined until December; a moderate recovery

Chart 3.



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in the first quarter of this year was followed by weakening again in the second quarter. Output of materials for equipment continued to rise until November 1966, and then declined in line with the cutbacks in production of business equipment. Meanwhile, production of materials for consumer durables peaked in October 1966, while output of other metal materials peaked in June 1966.

Output of business equipment (including commercial and industrial, freight and passenger, and farm equipment) closely followed the contour of expenditures for producers' durable goods. Output of business equipment declined steadily in each month during the first half of 1967, with the decline about twice as severe as the reduction in total industrial production. Near-term production prospects for business equipment are mixed. Favorable aspects include the restoration of the 7 percent investment tax credit, recent monthly gains in manufacturers' new orders for machinery and equipment, and the latest Commerce-SEC survey indicating a moderate rise in plant and equipment outlays during the third and fourth quarters of 1967. On the other hand, there are some factors creating an unfavorable climate for capital spending, including an enlarged amount of excess plant capacity and the recent weakness in corporate profits.

MANUFACTURERS' INVENTORIES

Inventory investment (or liquidation) by manufacturers is influenced by the course of capital spending, and by the sales performance of the trade sector. Chart 4 provides some perspective on inventory-sales relationships in the manufacturing sector, where

excessive inventories appear to be concentrated. The market groupings of inventories are broadly comparable to those of industrial production shown in Chart 3. Each market grouping includes inventories at all stages of fabrication — that is, materials and supplies, work-in-process, and finished goods. Because inventories can be considered as high or low only in relation to sales, inventory-shipments ratios, on a quarterly basis, are provided in the accompanying table. (The ratios taken alone reveal nothing about the course of inventories or the course of sales.)

Producers of defense products have experienced the sharpest rise in inventories — both in absolute terms and relative to shipments. But, because defense production is "to order," only 4 percent of those inventories are finished goods; the remainder is necessary to sustain rising defense output.

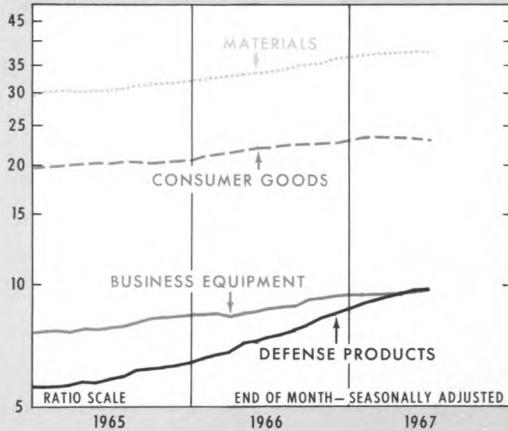
Inventories held by producers of business equipment, however, seem to pose a problem, inasmuch as shipments declined sharply after December while stocks continued to rise. Eventually, the high inventory-shipments ratio in this market category will have to be reduced — either by inventory liquidation (or at least a further slowdown of accumulation), a sustained rise in shipments, or some combination of the two.

Inventories held by producers of materials also appear to be high, at least relative to the level of shipments during 1965 and 1966. Shipments of materials were relatively unchanged in the second half of 1966, and then receded somewhat in the first half of 1967. Since inventory accumulation in materials continued, it appears that some adjustment

Chart 4.

MANUFACTURERS' INVENTORIES

Market Groupings
Billions of dollars



INVENTORY—SHIPMENTS RATIOS

	1965				1966				1967	
	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q*
MATERIALS	1.62	1.62	1.64	1.66	1.61	1.61	1.66	1.73	1.79	1.82
CONSUMER GOODS	1.26	1.26	1.24	1.21	1.22	1.24	1.28	1.27	1.35	1.27
BUSINESS EQUIPMENT	2.91	2.92	2.97	2.97	2.98	3.03	3.10	3.15	3.69	3.42
DEFENSE PRODUCTS	2.52	2.53	2.56	2.56	2.55	2.62	2.71	2.93	3.10	3.13

Source of data: U.S. Department of Commerce

* End of Quarter.

of the inventory-shipments ratio is also likely, whether in the form of increased shipments or adjustment of inventories.

Inventory accumulation by producers of consumer goods continued throughout 1966 and the early months of 1967, while shipments were weak for most of that period. Although adjustments were made in the output of consumer goods during much of 1966 and the first half of 1967, the stock-sales ratio in this category during the first quarter of 1967 was still high by prior standards. During the second quarter, the stock-sales ratio began to decline, as inventory accumulation ceased and shipments began to strengthen. Some further inventory adjustment by producers of consumer goods may yet occur.

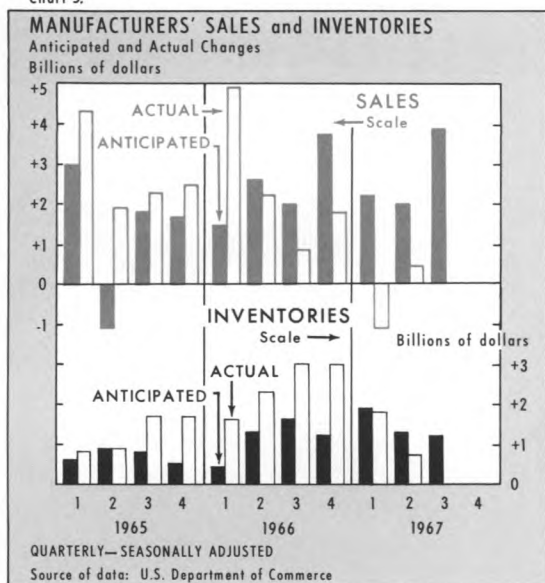
MANUFACTURERS' SALES AND INVENTORIES — ANTICIPATIONS vs. REALIZATIONS

As shown in Chart 5, part of the rise in

manufacturers' inventories was due to sales falling short of anticipations. The top panel shows quarterly changes in actual and anticipated manufacturers' sales. The anticipations data are based on surveys of the U. S. Department of Commerce taken about six weeks before the beginning of each quarter. During 1965 and in the first quarter of 1966, sales consistently rose more than anticipated. Beginning in the second quarter of 1966, however, sales consistently fell short of anticipated gains. The spread between anticipations and realizations became progressively larger through the first quarter of 1967, when sales actually declined. In the second quarter, sales rose once again, although not as much as manufacturers had anticipated in the February survey. The May 1967 survey revealed that manufacturers were extremely optimistic with regard to sales volume in the third quarter. An indication of the extreme optimism is found in the fact that not since the

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Chart 5.



booming first quarter of 1966 has there been an actual sales increase as large as the \$3.9 billion gain anticipated for the third quarter 1967.

As illustrated in the bottom panel of Chart 5, inventory accumulation by manufacturers ran considerably above anticipations during the second half of 1965 and throughout 1966. Much of the sales disappointments during the

second half of 1966 were accompanied by unplanned inventory accumulation. Such involuntary inventory additions resulted in production cutbacks and reduced rates of inventory investment during the first and second quarter of 1967.

The relatively moderate amount of inventory accumulation expected by manufacturers during the third quarter is associated with an anticipated sharp gain in sales. If production schedules are geared to the optimistic sales projection of the third quarter, and if the latter does not fully materialize, there could be another round of involuntary inventory accumulation. That, of course, would only aggravate the problem of excess manufacturers' inventories, as indicated by the relatively high stock-sales ratios previously discussed and as considered by manufacturers themselves. With respect to the latter point, in the May 1967 survey the percentage of manufacturers' inventories classified as high was the largest in almost a decade. The crucial element, therefore, is the behavior of sales in the third quarter, at least insofar as inventory developments are concerned.

AN ECONOMIC PROFILE OF DAYTON

Dayton is the fourth largest metropolitan area (SMSA) in Ohio and 39th largest in the nation.¹ Dayton is known as the birthplace of aviation and, perhaps more importantly, at least in a current context, is also recognized as a major production center of household, office, and automotive equipment. In view of the strong performance of these product lines, it should not be surprising that Dayton has experienced substantial economic growth in recent years.

Dayton's recent favorable economic record is a carry-through of its earlier performance, and is due in large part to the rather unique economic mix of the area. Compared with other major SMSA's in Ohio, Dayton has relatively high proportions of both manufacturing and government activity. The significance of the foregoing is perhaps found in the fact that manufacturing activity in Dayton, particularly the production of automobile equipment and appliances, provided much of the stimulus for growth from 1960 to 1966, while government activity acted as a buffer whenever economic activity moderated, such as during the 1960-1961 recession.

BACKGROUND AND POPULATION GROWTH

Founded in the late 1790's when access by water was a prime consideration for settle-

¹ The Dayton Standard Metropolitan Statistical Area includes Montgomery, Miami, Greene, and Preble Counties.

ment, Dayton is situated on the banks of the Miami River where the Stillwater and Mad Rivers join the mainstream. Dayton's original population of 20 pioneers grew to 228,600 in 1900, to 727,100 in 1960, and to 776,000 in 1965. Population in the Dayton SMSA more than tripled from 1900 to 1965, increasing at an average annual rate of 1.5 percent, or by the same rate as the eight major SMSA's in Ohio combined² (see Table I). From 1960 to 1965, population in the Dayton SMSA increased nearly 7 percent, the third largest gain among Ohio's major SMSA's. During both periods, population growth in Dayton exceeded growth in the State of Ohio, and from 1900 to 1965 it grew faster than in the United States.

Part of Dayton's substantial population gain resulted from migration to the area. Of the total 1960 population, 18 percent moved to the Dayton SMSA after 1955; nearly one-half of that group migrated from other parts of Ohio while the remainder previously resided out of state.³ It is likely that heavy migration continued in the 1960-1965 period,

² Major Standard Metropolitan Statistical Areas in Ohio are those having more than 40,000 employed in manufacturing or population of 500,000 or more.

³ For comparison, the proportions of the population migrating into the other major SMSA's during the 1955-1960 period were: Akron, 12 percent; Canton, 10 percent; Cincinnati, 12 percent; Cleveland, 11 percent; Columbus, 18 percent; Toledo, 9 percent; and Youngstown-Warren, 11 percent. Data for the 1960-1965 period are not yet available.

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TABLE I

Population

Dayton SMSA, Other Selected SMSA's in Ohio, State of Ohio, and United States
1900-1965

	Population (thousands of persons)			Percent Increase		Average Annual Rate of Growth 1900-1965
	1900	1960	1965	1900-1965	1960-1965	
United States	76,212.2	179,323.2	193,795.0	154.3%	8.1%	0.7%
Ohio	4,157.5	9,706.4	10,241.0	146.3	5.5	0.6
Total 8 SMSA's	2,112.1	6,745.4	7,061.5	234.3	4.7	1.5
Akron	101.0	605.4	634.0	528.0	4.7	3.1
Canton	94.7	340.3	365.5	285.8	7.4	1.9
Cincinnati	617.9	1,268.5	1,329.0	115.1	4.8	0.2
Cleveland	497.5	1,909.5	1,971.0	296.2	3.2	1.9
Columbus	217.9	754.9	828.0	280.0	9.7	1.9
Dayton	228.6	727.1	776.0	229.5	6.7	1.5
Toledo	237.9	630.6	647.0	172.0	2.6	0.9
Youngstown-Warren	116.7	509.0	511.0	337.8	0.4	2.2

Sources: U. S. Department of Commerce and Department of Health, State of Ohio

and played a major role in the growth of Dayton's population.

The relatively rapid migration of people to the Dayton area probably reflects expanding job opportunities. In the 1960-1966 period, for example, total nonagricultural wage and salary employment in the Dayton SMSA increased 17 percent. Among the major SMSA's in Ohio, only Columbus, with an employment gain of 20 percent, recorded a larger increase during the period.

NONAGRICULTURAL EMPLOYMENT

Growth. Nonagricultural wage and salary employment in the Dayton SMSA totaled 295,000 persons in 1966, fourth among Ohio's major SMSA's (see Table II). From 1960 to 1966, among the major employment groups, relative gains in manufacturing, contract construction, transportation and public utilities, and finance, insurance, and real estate in the Dayton SMSA were larger than in the other

major SMSA's in Ohio, as well as those in the United States as a whole. The percent increase in wholesale and retail trade employment in Dayton during 1960-1966 was the second largest among the major SMSA's in Ohio, and the percent increase in services was the fourth largest; gains in both categories were slightly below those in the nation. Government employment in the Dayton SMSA recorded the smallest percent increase from 1960 to 1966 among the major SMSA's in Ohio, as well as the smallest increase of all the major groups in Dayton. This was due largely to the fact that the number of people employed by the Federal Government in the area changed little during the period under review.

Composition. By far, manufacturing is the most important source of employment in the Dayton SMSA, followed by government, wholesale and retail trade, services, and construction (see Tables II and III). With 42.3

percent of total nonagricultural employment in manufacturing in 1966, Dayton ranked fourth among Ohio's eight largest SMSA's. The SMSA also had a slightly larger proportion of manufacturing employment than Ohio (39.5 percent) and was substantially above the United States as a whole (29.9 percent).

Government, including Federal and state and local agencies, is the second largest source of nonfarm employment and the largest source of nonmanufacturing employment in the Dayton SMSA, due largely to the concentration of Federal Government workers at Wright-Patterson Air Force Base.

Government employment in Dayton amounted to 52,000 persons in 1966, or 17.5 percent of total nonfarm employment, the second largest proportion among Ohio's eight major SMSA's, as shown in Table III. In comparison, government employment in Ohio was 13.8 percent of total wage and salary employment and in the United States, 17 percent. Among Ohio's major SMSA's, only Columbus, where state government employ-

ment swells public employment, had a higher proportion of government employment than Dayton.

From 1960 to 1966, government employment in the Dayton SMSA increased only 11 percent (see Table II). Employment in local government agencies, including public schools, increased by 30 percent in the Dayton SMSA, about in line with the other major SMSA's in Ohio. Federal Government employment, however, reflecting a reduction of personnel at Wright-Patterson Air Force Base, was virtually the same in 1966 as six years earlier.

Wholesale and retail trade is the third most important source of employment in Dayton, and services the fourth. Together, trade and services in 1966 accounted for about 30 percent of total nonfarm employment in Dayton. The proportion of employment in each category in 1966 was below the other major SMSA's in Ohio (except Canton in the case of services) and the United States. At 50,000 persons, employment in wholesale and retail

TABLE II
Nonagricultural Employment
Seven Major Employment Categories
Dayton SMSA, Other Selected SMSA's, State of Ohio, and United States
1966 Annual Average and Percent Change 1960-1966

	Total Nonagricultural Employment		Manufacturing		Contract Construction		Transportation and Public Utilities		Wholesale and Retail Trade		Finance, Insurance, and Real Estate		Services		Government	
	1966 (000)	Percent Change 1960-66	1966 (000)	Percent Change 1960-66	1966 (000)	Percent Change 1960-66	1966 (000)	Percent Change 1960-66	1966 (000)	Percent Change 1960-66	1966 (000)	Percent Change 1960-66	1966 (000)	Percent Change 1960-66	1966 (000)	Percent Change 1960-66
United States	63,864	+18%	19,081	+14%	3,281	+14%	4,137	+3%	13,220	+16%	3,086	+16%	9,582	+29%	10,850	+30%
Ohio	3,492	+11	1,380	+9	151	+4	208	*	670	+8	135	+12	444	+19	484	+21
Akron	216	+10	94	+3	8	+9	14	+5	40	+8	6	+13	27	+23	27	+36
Canton	122	+10	60	+9	4	-5	7	+7	22	+9	4	+8	14	+19	11	+18
Cincinnati	449	+5	161	+1	19	-8	33	-4	93	+4	24	+6	60	+14	59	+25
Cleveland	791	+10	305	+5	31	-9	49	+4	161	+8	37	+13	110	+22	96	+27
Columbus	324	+20	83	+11	16	+20	20	+5	68	+18	20	+25	48	+30	68	+32
Dayton	295	+17	125	+20	13	+27	12	+12	50	+12	8	+26	36	+26	52	+11
Toledo	214	+11	79	+6	9	+7	16	+7	45	+5	7	+8	31	+28	28	+27
Youngstown- Warren	181	+10	85	+7	9	-12	10	+7	32	+10	5	+2	24	+28	17	+18

NOTE: 1960 data for Akron, Cincinnati, Cleveland, Columbus, Dayton, and Toledo have been modified by Federal Reserve Bank of Cleveland to be comparable with 1966 data.

* Less than 0.5 percent change.

Sources: U. S. Department of Labor and Division of Research and Statistics, Ohio Bureau of Unemployment Compensation

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trade increased 12 percent from 1960 to 1966, the second largest gain among the major Ohio SMSA's (see Table II). Employment in services totaled 36,000 persons in 1966, 26 percent more than in 1960, and one of the larger gains among the major Ohio SMSA's.

Although accounting for a relatively small amount of nonfarm employment in the Dayton SMSA (ranking fifth in importance), construction activity has contributed importantly to the economic growth of the area. The value of residential building contracts awarded during 1966 totaled \$103.4 million, 33 percent more than in 1960; nonresidential building contracts totaled \$99.8 million in 1966, or 47 percent more than in 1960. In light of the substantial gains in building contract awards, it is not surprising that construction employment in Dayton increased 27 percent from 1960 to 1966, a more favorable showing than in any other major SMSA in Ohio (see Table II).

MANUFACTURING EMPLOYMENT

As indicated earlier, manufacturing accounts for nearly half of nonagricultural employment in the Dayton SMSA, increasing by 20 percent from 1960 to 1966, compared with increases of 9 percent in the State and 14 percent in the nation. Although the number employed in the manufacture of nondurable goods recorded a substantial gain (12 percent) from 1960 to 1966, employment in durable goods manufacturing increased nearly twice as fast (23 percent). Durable goods manufacturing in Dayton mainly involves the manufacture of electrical and nonelectrical machinery, and accounts for nearly three-fourths of total manufacturing employment.

Manufacturing Employment Dayton SMSA

	Distribution 1966 Annual Average	Percent Change 1960-1966*
Durable goods	71%	+23%
Machinery, except electrical.	29%	+34
Electrical machinery	22	+ 7
Transportation equipment	7	+ 6
Stone, clay, and glass products.	2	+11
Other durable goods	11	+50
Nondurable goods	29	+12
Printing and publishing	9	+15
Paper and allied products	5	+30
Food and kindred products	4	-13
Other nondurable goods	11	+15
Total manufacturing	100%	+20%

*Data for 1960 have been modified by the Federal Reserve Bank of Cleveland to be comparable with 1966 data.

Source: Division of Research and Statistics,
Ohio Bureau of Unemployment Compensation

The nonelectrical machinery industry is clearly the most important source of manufacturing employment in the Dayton SMSA. In 1966, employment in that industry totaled 36,700 persons, nearly one-third of total manufacturing employment. Moreover, from 1960 to 1966, the nonelectrical machinery industry in Dayton recorded an employment gain of 34 percent, by far the largest among the major industrial groupings in the SMSA.

Four of the 13 largest plants (employing over 1,000 persons) in the Dayton SMSA manufacture nonelectrical machinery. The largest company, which employed over 17,000 in 1965, primarily manufactures computing and accounting machines, and is known nationally as a manufacturer of cash registers. Other nonelectrical machinery plants in Dayton that employ substantial numbers of persons produce refrigeration equipment (except household), food products machinery, and printing machinery. In addition, there are a

TABLE III
Percent Distribution of Total Nonagricultural Employment
Seven Major Employment Categories
Dayton SMSA, Other Selected SMSA's in Ohio, State of Ohio, and United States
1966 Annual Average

Manufacturing		Government		Wholesale and Retail Trade		Services	
Canton	49.1%	Columbus	21.1%	Columbus	20.9%	United States	15.0%
Youngstown-				Toledo	20.8		
Warren	46.7	Dayton	17.5			Columbus	15.0
Akron	43.7			United States	20.7	Toledo	14.5
Dayton	42.3	United States	17.0			Cleveland	13.9
				Cincinnati	20.6	Cincinnati	13.4
Ohio	39.5	Ohio	13.8	Cleveland	20.4	Youngstown-	
						Warren	13.0
Cleveland	38.6	Cincinnati	13.2	Ohio	19.2		
Toledo	36.7	Toledo	12.8			Ohio	12.7
Cincinnati	35.8	Akron	12.5	Akron	18.4		
		Cleveland	12.1	Canton	18.2	Akron	12.6
United States	29.9	Youngstown-		Youngstown-		Dayton	12.1
		Warren	9.5	Warren	17.8	Canton	11.6
Columbus	25.8	Canton	8.6	Dayton	16.8		

Contract Construction		Transportation and Utilities		Finance, Insurance, Real Estate	
United States	5.1%	Toledo	7.8%	Columbus	6.2%
		Cincinnati	7.3	Cincinnati	5.3
Columbus	4.7				
Youngstown-		United States	6.5	United States	4.8
Warren	4.7				
Ohio	4.3	Akron	6.4	Cleveland	4.7
		Cleveland	6.2		
Cincinnati	4.3	Ohio	6.0	Ohio	3.9
Dayton	4.3			Canton	3.3
Toledo	4.2	Columbus	6.0	Toledo	3.2
Cleveland	3.9	Youngstown-		Akron	2.8
Akron	3.5	Warren	5.5	Dayton	2.8
Canton	3.5	Canton	5.3	Youngstown-	
		Dayton	3.9	Warren	2.5

Sources: U. S. Department of Labor and Division of Research and Statistics, Ohio Bureau of Unemployment Compensation

large number of special tool and die shops in Dayton.

Production of electrical machinery, equipment, and supplies was the second largest source of employment among manufacturing industries in Dayton, employing 27,200 per-

sons in 1966 or 7 percent more than in 1960. The two largest electrical machinery plants are divisions of a major automobile producer. Together, these two plants employ over 20,000 persons in the manufacture of household refrigerators, home and farm freezers,

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and electrical equipment for internal combustion engines. The third largest electrical machinery plant, which employs over 1,200 persons, produces welding equipment.

Employment in the transportation equipment industry is dominated by two plants that produce motor vehicle parts and accessories. These two plants are also divisions of the automobile company that has the two largest electrical machinery plants in Dayton.

The printing and publishing industry in Dayton employed 11,600 persons in 1966, making it the largest employer among the nondurable goods industries. This industry is concerned with printing and publishing nationally circulated periodicals, as well as newspapers. A number of commercial printers and lithographers are also located in Dayton.

The paper and allied products industry in Dayton recorded the most sizable gain for a single industry in nondurable goods employment from 1960 to 1966 — 30 percent. The industry employed 5,700 persons in 1966 or about one-half the number in the printing and publishing industry.

Average earnings for all manufacturing industries in the Dayton SMSA amounted to \$3.39 per hour in 1966. Average hourly earnings in Dayton scored the largest gain among the major SMSA's in Ohio from 1960 to 1966, and were the second highest in the State in 1966, moving ahead of Youngstown-Warren (see Table IV). Average wage levels in Dayton were substantially above the State and the nation in 1966, and showed larger gains from 1960 to 1966 than either Ohio or the United States.

TABLE IV
Average Hourly Earnings in Manufacturing Dayton SMSA, Other Selected SMSA's in Ohio, State of Ohio, and United States 1960 and 1966

	1960	1966	Percent Change 1960-1966
United States	\$2.26	\$2.71	+20%
Ohio	2.60	3.10	+19
Akron	2.85	3.42	+20
Canton	2.67	3.10	+16
Cincinnati	2.43	2.92	+20
Cleveland	2.67	3.17	+19
Columbus	2.47	2.97	+20
Dayton	2.73	3.39	+24
Toledo	2.71	3.23	+19
Youngstown-Warren	2.93	3.37	+15

Sources: U. S. Department of Labor and Division of Research and Statistics, Ohio Bureau of Unemployment Compensation

MEASURES OF MANUFACTURING ACTIVITY

A number of measures point to the fact that manufacturing activity in the Dayton SMSA has grown rapidly in recent years. This Bank's index of manufacturing activity, which is based on electric power consumption by industrial users, increased 59 percent from 1960 to 1966 in Dayton, outperforming the other major Ohio SMSA's for which the measure is available. In the same period, the comparable index for the nation increased 46 percent (see Table V).

In 1963,⁴ Dayton ranked third in value added by manufacture among the major Ohio SMSA's. Total value added was \$1.3 billion, which represented a 45-percent increase between 1958 and 1963, the largest for any SMSA in Ohio with the exception of Canton (see Table V). In comparison, Ohio and the United States had 35-percent and

⁴ Latest year for which data are available.

TABLE V
Measures of Manufacturing Activity
Dayton SMSA, Other Selected SMSA's in Ohio, State of Ohio, and United States

	Manufacturing Activity*			Value Added by Manufacture			Capital Expenditures (new)		
	1960	1966	Percent Change 1960-1966	(mil. \$)		Percent Change 1958-1963	(mil. \$)		Percent Change 1958-1963
				1958	1963		1958	1963	
United States	109†	159p†	+46%	\$141,541	\$192,103	+36%	\$9,545	\$11,371	+19%
Ohio	n.a.	n.a.	n.a.	11,473	15,506	+35	796	848	+ 7
Akron	n.a.	n.a.	n.a.	809	1,014	+25	59	63	+ 8
Canton	n.a.	n.a.	n.a.	450	667	+48	27	33	+25
Cincinnati	112	144	+29	1,555	2,057	+32	107	78	-27
Cleveland	106	149	+41	2,558	3,379	+32	143	177	+23
Columbus	111	167	+51	680	962	+41	52	58	+10
Dayton	107	170	+59	912	1,318	+45	42	60	+43
Toledo	108	158	+46	716	911	+27	58	43	-26
Youngstown-Warren	n.a.	n.a.	n.a.	729	902	+24	53	57	+ 8

p —Preliminary.

* (1957-1959 = 100) Based mainly on electric power consumption by manufacturers.

† Manufacturing component of U. S. Index of Industrial Production.

Sources: U. S. Department of Commerce; Board of Governors of the Federal Reserve System; Federal Reserve Bank of Cleveland

36-percent gains, respectively, in the period from 1958 to 1963. Capital spending in Dayton scored the largest gain among the major SMSA's in Ohio during the 1958-1963 period, in fact substantially more than in either the State of Ohio or the United States.

IMPORTANCE OF EMPLOYMENT MIX

The rather unique employment mix in the Dayton SMSA — high proportions of both manufacturing and government employment — has been primarily responsible for the relatively moderate reaction to cyclical swings in business activity as well as for the favorable growth record since 1960. In particular, government employment in Dayton, which exhibited moderate but steady growth during the 1960-1966 period, acted as a buffer during the 1960-1961 recession, helping the area to minimize the impact of the downturn.

As a case in point, total nonagricultural employment in Dayton declined only 1.6 percent from 1960 to 1961, a performance bettered only by Columbus among Ohio's major SMSA's.

The stabilizing effect of government employment during the 1960-1961 recession was reinforced by the relatively mild slowing of manufacturing activity in Dayton compared with other major SMSA's in Ohio. Manufacturing employment in Dayton declined only 4.1 percent in 1960-1961, far less than in Akron, Canton, Youngstown-Warren, or Cleveland, which have comparable proportions of nonfarm employment engaged in manufacturing (see Tables VI and II). Similarly, the decline in value added by manufacture was far less than in any other SMSA except Akron, and capital expenditures in Dayton actually increased from 1960 to 1961,

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TABLE VI

Selected Measures of Manufacturing Activity

Dayton SMSA, Other Selected SMSA's in Ohio, State of Ohio, and United States

1960-1961

	Manufacturing Employment as Percent of Total Nonagricultural Employment	Percent Change 1960-1961			
		Total Nonagricultural	Manufacturing Employment	Value Added by Manufacture	Capital Spending
United States	30%	-0.4%	-2.8%	+0.2%	- 3.2%
Ohio.	40	-3.3	-6.5	-3.8	- 6.7
Akron	44	-4.2	-8.1	-0.1	-19.8
Canton	49	-4.8	-8.0	-7.2	-16.6
Cincinnati	36	-2.9	-5.5	-2.1	-13.1
Cleveland	39	-3.7	-7.8	-7.9	- 1.7
Columbus	26	+1.0	-2.3	-4.9	- 6.4
Dayton	42	-1.6	-4.1	-0.7	+15.9
Toledo	37	-4.9	-9.3	-8.2	- 1.6
Youngstown-Warren	47	-5.5	-9.6	-7.7	-34.8

Sources: U. S. Department of Commerce; U. S. Department of Labor; Division of Research and Statistics, Ohio Bureau of Unemployment Compensation

the only such case among the major SMSA's in Ohio.

Against this background, it should not be surprising that the rate of unemployment in Dayton in 1960 was the lowest among major SMSA's in Ohio and in 1961, the second lowest. During the entire period 1960-1966, Dayton had the lowest rate of unemployment among major SMSA's in Ohio in four years and second lowest in three years (see Table VII). In 1966, the rate of unemployment in Dayton averaged 2.7 percent, the same as in Columbus.

FINANCIAL ACTIVITY

Measures of financial activity during 1960-1966 point out a number of similarities and differences between Dayton and the other major SMSA's in Ohio. Overall, the volume of financial activity in Dayton (as measured by bank debits, savings deposits, and bank loans) may be somewhat less than expected in view of the nature of economic activity in

the area. Nevertheless, each of these series registered gains from 1960 to 1966, reflecting the strong growth record of that period.

Dayton ranked sixth in bank debits volume among the major centers in Ohio in 1966, and showed an increase of 70 percent during 1960-1966, the third largest gain in the State, following Columbus and Akron. Similarly, while savings deposits of individuals at commercial banks in Dayton represented the sixth largest volume in Ohio, the gain from 1960 to 1966 (142 percent) was the second largest among the major centers (see Table VIII).

The volume of loans outstanding at Dayton banks increased 66 percent from 1960 to 1966, the fifth largest gain among the major cities in Ohio (see Table VIII). At year-end 1966, total loans outstanding at Dayton banks totaled \$511 million, placing the area fifth among the SMSA's in Ohio. The volume of commercial and industrial loans outstanding at Dayton banks was \$141 million at year-end 1966, or 23 percent more than six years earlier.

TABLE VII

Rate of Unemployment Among all Civilian Workers 14 Years of Age and Over
Dayton SMSA, Other Selected SMSA's in Ohio, State of Ohio, and United States
1960-1966

	1960	1961	1962	1963	1964	1965	1966
United States	5.6%	6.7%	5.6%	5.7%	5.2%	4.6%	3.9%
Ohio	5.3	7.3	5.7	5.1	4.2	3.5	3.1
Akron	4.6	7.4	4.9	4.7	4.2	3.2	2.9
Canton	5.9	8.9	7.0	6.3	4.4	3.5	3.2
Cincinnati	4.0	5.5	4.4	4.2	4.8	4.0	3.3
Cleveland	4.8	7.0	5.2	4.4	3.6	3.1	2.8
Columbus	3.8	4.3	3.3	3.3	3.3	2.8	2.7
Dayton	3.6	5.1	3.9	3.7	3.0	2.8	2.7
Toledo	5.0	8.4	6.2	5.1	4.4	3.7	3.4
Youngstown-Warren	7.4	9.9	8.3	6.5	4.2	3.9	3.8

Sources: U. S. Department of Labor and Division of Research and Statistics,
Ohio Bureau of Unemployment Compensation

TABLE VIII

Bank Debits, Savings Deposits of Individuals, and Loans Outstanding
Dayton and Other Selected Cities in Ohio
1966

	Bank Debits (annual totals)		Savings Deposits of Individuals (annual average)		Loans Outstanding (year-end)			
					Total		Commercial and Industrial	
	(mil. \$) 1966	Percent Change 1960-66	(mil. \$) 1966	Percent Change 1960-66	(mil. \$) 1966	Percent Change 1960-66	(mil. \$) 1966	Percent Change 1960-66
Akron	\$12,365	+ 77%	\$ 318	+ 99%	\$ 514	+ 78%	\$ 144	+129%
Canton	3,852	+ 57	135	+ 96	236	+ 52	62	+ 50
Cincinnati	32,085	+ 50	361	+ 84	1,136*	+ 51	428*	+ 60
Cleveland	73,515	+ 58	1,852	+ 56	3,473	+ 76	1,175	+102
Columbus	28,445	+112	331	+210	844	+129	237	+ 87
Dayton	10,704	+ 70	152	+142	511	+ 66	141	+ 23
Toledo	12,253	+ 42	279	+ 85	436†	+ 71	121†	+ 58
Youngstown-Warren	6,374	+ 50	132‡	+ 39‡	341	+ 58	70	+ 71

* Does not include Dearborn County, Indiana.

† Does not include Monroe County, Michigan.

‡ Youngstown only.

NOTE: Bank debits and savings deposits data are for reporting banks (member and nonmember) in selected centers, which are reported monthly to the Federal Reserve Bank of Cleveland. Savings deposits at reporting banks (member and nonmember) represent chiefly savings deposits of individuals and eleemosynary organizations, Christmas savings and similar thrift accounts, and time certificates of deposit of individuals. Loan data are from call reports of all insured commercial banks in the SMSA's.

Source: Federal Reserve Bank of Cleveland

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Commercial and industrial loan activity in the Dayton area reveals a pattern somewhat different from Cincinnati, Cleveland, Columbus, or Toledo (see Table IX). For example, as of June 28, 1967, despite the importance of manufacturing activity in Dayton, only 30 percent of commercial and industrial loans outstanding was to borrowers engaged in manufacturing, compared with 41 percent in Cincinnati, 43 percent in Toledo, and 50 percent in Cleveland. Loans to companies in machinery manufacturing accounted for 13 percent of total commercial and industrial loans, about the same as in Cleveland and Toledo.

Following manufacturing, the largest proportion of commercial and industrial loans at Dayton banks was to trade firms, with loans to personal and business service companies fairly close behind. With 21 percent of com-

mercial and industrial loans to service industries, Dayton far outranked the other cities for which comparable data are available. The pattern of commercial and industrial loan activity in the Dayton area, with concentration in the services industry and wholesale and retail trade, probably reflects the fact that Dayton is the location of many branches and plants of manufacturing firms headquartered elsewhere, and which borrow in other locations.

CONCLUDING COMMENTS

The Dayton SMSA achieved rapid gains in economic activity during 1960-1966 due in large part to the composition of the area's economic activity. Large facilities for producing automotive equipment enabled the area to take advantage of the high level of automobile sales, particularly during the last

TABLE IX
Percent Distribution of Commercial and Industrial Loans Outstanding by Industry
Dayton and Other Selected Cities in Ohio
June 28, 1967

	<u>Cincinnati</u>	<u>Cleveland</u>	<u>Columbus</u>	<u>Dayton</u>	<u>Toledo</u>
Manufacturing	41.4%	49.5%	20.8%	30.3%	43.3%
Durable goods	25.8	32.9	13.6	22.4	28.0
Primary metals	2.8	3.6	0.1	1.0	1.9
Machinery	8.8	13.6	5.2	13.1	11.0
Transportation equipment	2.3	4.7	1.8	1.6	2.1
Other fabricated metal products	5.9	7.8	2.5	5.7	7.4
Other durable goods	6.0	3.1	4.0	1.0	5.6
Nondurable goods	15.6	16.6	7.2	7.9	15.3
Nonmanufacturing	43.9	38.0	62.7	54.1	55.8
Construction	7.7	4.0	11.7	8.6	3.6
Transportation and public utilities	6.5	12.7	11.2	2.1	6.8
Trade	19.6	12.2	27.3	22.4	32.4
Services	10.1	9.1	12.5	21.0	13.0
Other*	14.7	12.5	16.5	15.6	0.9

* Includes loans not otherwise classified, foreign loans, loans to mining companies, and bankers' acceptances.

NOTE: Data are for weekly reporting banks.

Source: Federal Reserve Bank of Cleveland

three years of the period. In addition, manufacturing activity in Dayton benefited from the "computer boom." Government employment, on the other hand, contributed to employment stability in the area even though actual gains during 1960-1966 were comparatively small.

Thus far in 1967, economic activity in Dayton has continued to advance despite the sluggish performance of the national economy in general. During the first six months

of the year, this Bank's index of manufacturing activity in Dayton increased 3 percent, while the comparable United States index declined 2 percent. The only other area in the State where the index of manufacturing activity performed more favorably during the first half of 1967 was Toledo, which showed an exceptionally large gain. Finally, at 3.0 percent in May, the unemployment rate in Dayton was lower than in any of Ohio's eight major SMSA's.

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