

The following pages are excerpts from “ The Ohio Industrial Machinery and Equipment Industry ” report. The full report is 92 pages in length and includes appendices of referenced Industrial Machinery and Equipment data. “ The Ohio Industrial Machinery and Equipment Industry ” report may be purchased for \$20.00 (ID no. BA5). For additional information or to purchase the full report please contact the Office of Strategic Research.

THE OHIO INDUSTRIAL MACHINERY AND EQUIPMENT INDUSTRY

OCTOBER, 1996

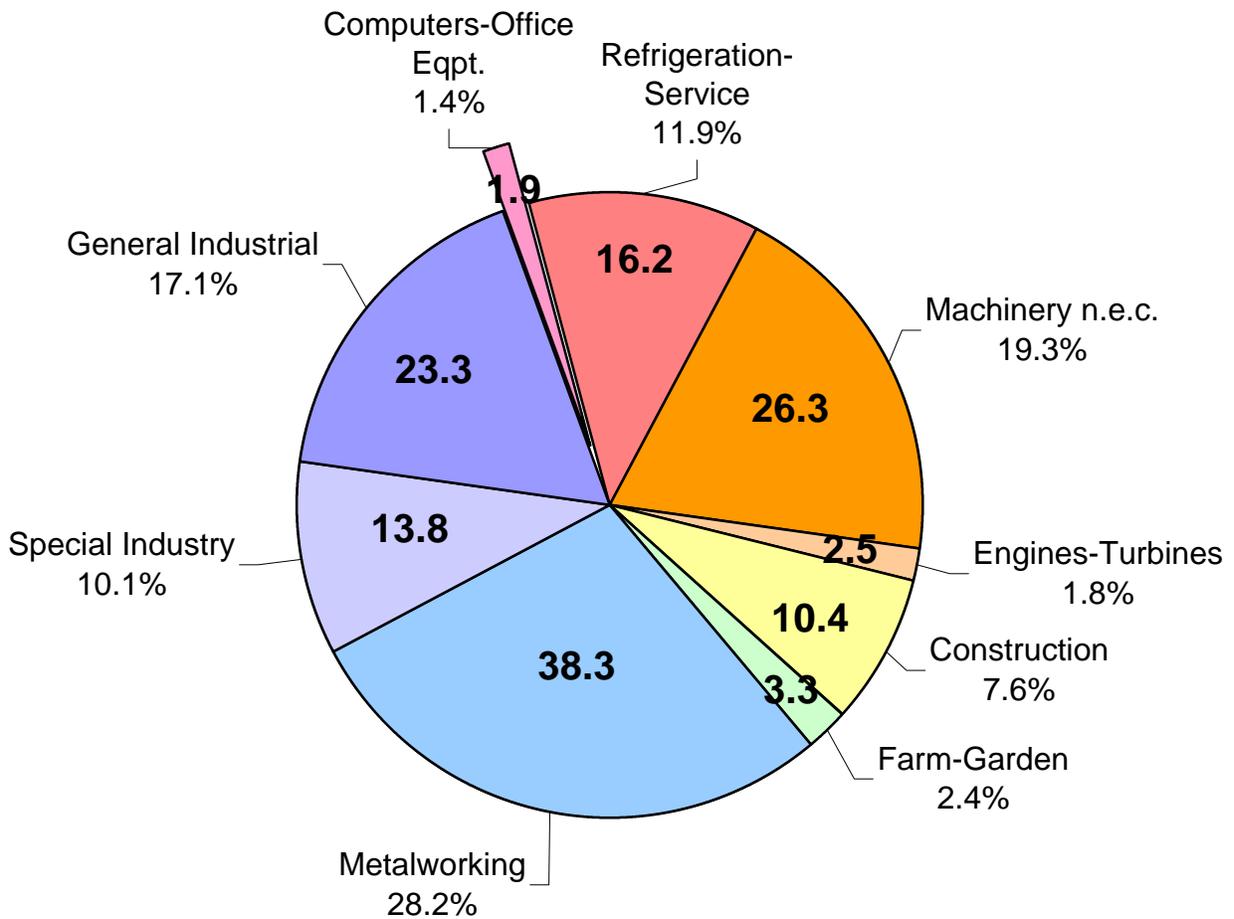
This report should be cited as follows:
"The Ohio Industrial Machinery and Equipment Industry."
Prepared and distributed by the Office of
Strategic Research, Ohio Department of
Development, October, 1996.

Don Larrick, Analyst
Ed Simmons, GIS Specialist
Office of Strategic Research, Ohio Department of Development
P.O. Box 1001, Columbus, Ohio 43216-1001
Telephone (614) 466-2115

Employment in Ohio's Industrial Machinery & Equipment Industry: 1993

(thousands of jobs-in the slice; percentage-outside)

Total Employment: 136.0



Source: U.S. Census Bureau

A DESCRIPTION OF THE INDUSTRIAL MACHINERY AND EQUIPMENT INDUSTRY

Over 3,900 establishments employed almost 136,000 people in Ohio's industrial machinery and equipment industry in 1993. The work of these people produced almost \$7 billion dollars worth of goods in 1992.

No one group dominates the industry. Metalworking (SIC 354) machinery had the largest number of employees (38,300--28.2%) and the second largest number of establishments (1,183--30%). Industrial machinery n.e.c. (SIC 359) had the second largest number of employees (26,300--19.3%) and the largest number of establishments (1,714--43.5%). The other industry groups, in descending order of employment, are general industrial machinery (SIC 356, 17.1% of employment and 7.2% of establishments), refrigeration and service machinery (SIC 358, 11.9% of employment, but just 3.2% of establishments), special industry machinery (SIC 355, 10.1% of employment and 7.9% of establishments), and construction and related machinery (SIC 353, 7.6% of employment and 4.4% of establishments). Engines and turbines (SIC 351), farm and garden machinery (SIC 352), and computers and office equipment (SIC 357) combined for 7.2% of employment.

Just over seven percent of the U.S. industrial machinery and equipment industry establishments and almost eight percent of the jobs are found in Ohio. (Ohio's proportions of all establishments and jobs in the U.S. are four and four and a half percent each.) Metalworking machinery (SIC 354) is especially concentrated in Ohio. At the opposite extreme, employment and establishments in computer and office equipment (SIC 357) are relatively sparse.

The average industry establishment in Ohio employs about as many people as the average industry establishment in the U.S.

Ohio Industrial Machinery and Equipment
Employment by Industry Group
 With Share of U.S. Employment & Apparent Rank: 1993

Industry	Ohio Employment	Percent of U.S.	50-State Rank	States with More
SIC 35: Industrial Machinery & Equipment	135,961	7.8%	2 nd	CA
SIC 351: Engines & Turbines	2,507	3.0%	11 th	WI, IN, NY, IL, CA, MI, NC, CT, SC, & TX
SIC 352: Farm & Garden Machinery	3,279	3.6%	10 th	IA, IL, WI, TN, NE, KS, MN, SC, & GA
SIC 353: Construction & Related Machinery	10,422	5.9%	5 th	TX, IL, PA & WI
SIC 354: Metalworking Machinery	38,278	14.6%	2 nd	MI
SIC 355: Special Industry Machinery	13,792	8.5%	2 nd	CA
SIC 356: General Industrial Machinery	23,323	9.6%	1 st	
SIC 357: Computer & Office Equipment	1,859	0.8%	26 th	Many
SIC 358: Refrigeration & Service Machinery	16,234	5.5%	1 st	
SIC359: Industrial Machinery n.e.c.	26,266	7.3%	2 nd	CA

Source: U.S. Census Bureau

OHIO'S RELATIVE STANDING

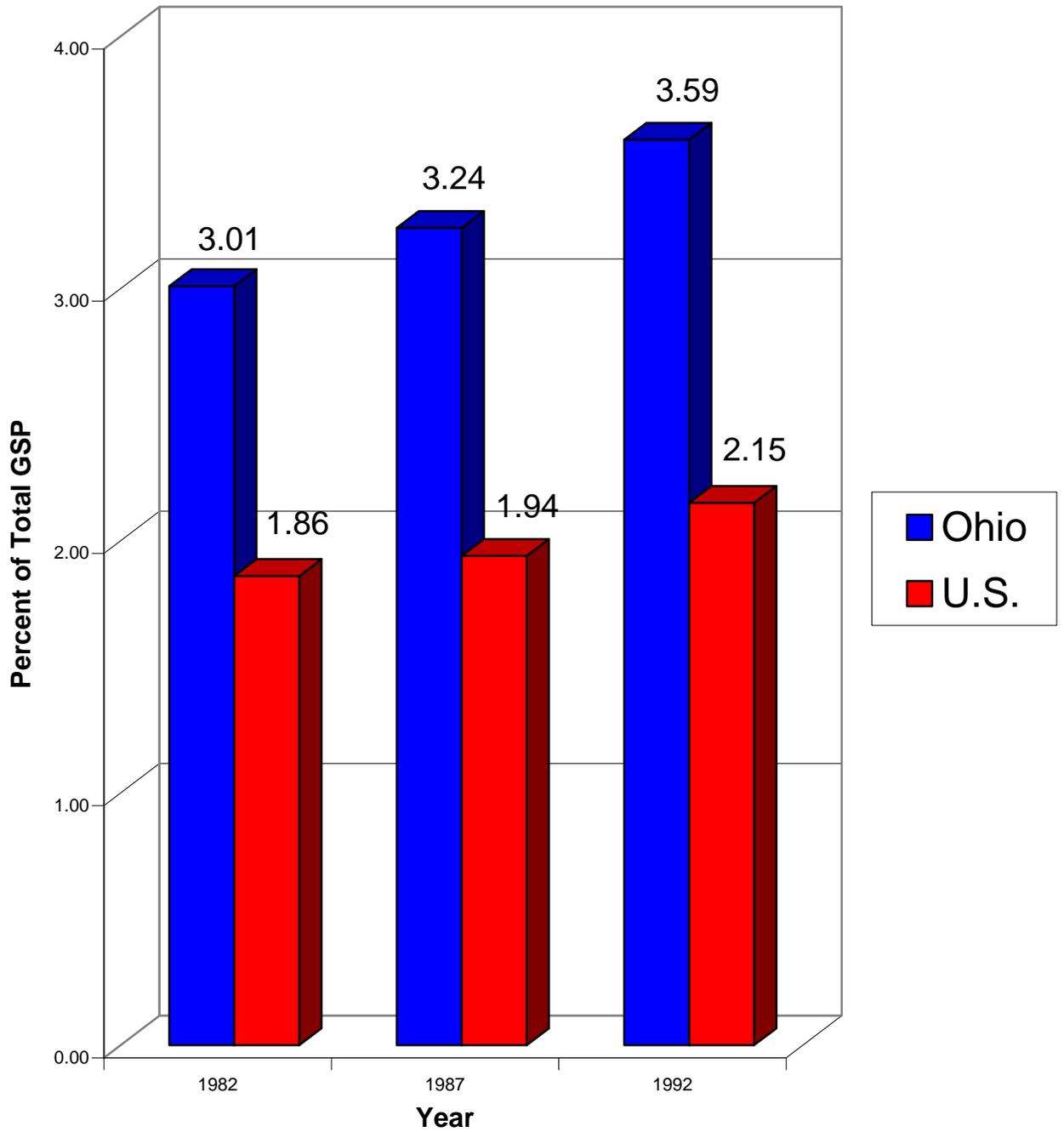
With 136,000 employees, Ohio ranked second in the nation in industrial machinery and equipment employment, based on 1993 Census Bureau data. The principal component of this rank are the 38,300 workers employed in metal working machinery (SIC 354). Ohio was also a leading center for four of the industry's other groups: special industry machinery (SIC 355--13,800), general industrial machinery (SIC 356--23,300), refrigeration and service machinery (SIC 358--16,200), and industrial machinery n.e.c. (SIC 359--26,300). Overall, California was first in 1993 with 166,800 industry workers.

Ohio ranked third in 1992 in the production of industrial machinery and equipment (SIC 35), as judged by the current dollar value of gross state product (\$7 billion). Only California and Illinois produced more (\$13 and \$7.5 billion, respectively). Value added and value of shipment data give us a more detailed picture of why Ohio ranks so high. It is the leading state for the production of general industrial (SIC 356) and refrigeration and service machinery (SIC 358). It is also an important location for the production of metalworking (SIC 354), special industry (SIC 355), and machinery not elsewhere classified (SIC 359).

Ohio is the leading producer of a variety of goods regardless of whether a particular industry is concentrated in the state. The list includes the following industries and product classes: scrapers, graders, rollers, off-highway trucks and coal haulers; bulk material handling conveyors other than farm elevators; industrial trucks and tractors; metal lathes; various metal forming machine tools; selected types of power-driven handtools; selected kinds of rolling mill machinery; welding apparatus; miscellaneous binding machinery; non-packaging commercial food products machinery; rubber and plastics working machinery other than molds; parts for pumps; unmounted ball bearings; blowers and fans; packaging machinery; refrigeration and heating equipment; service industry machines; commercial and industrial vacuum cleaners; hydraulic power cylinders and actuators for non-aerospace uses; and fluid power pumps and motors.

SIC Code 35's Share of Ohio and U.S. GSP Ten Year Trends

(based on constant 1987 dollars)



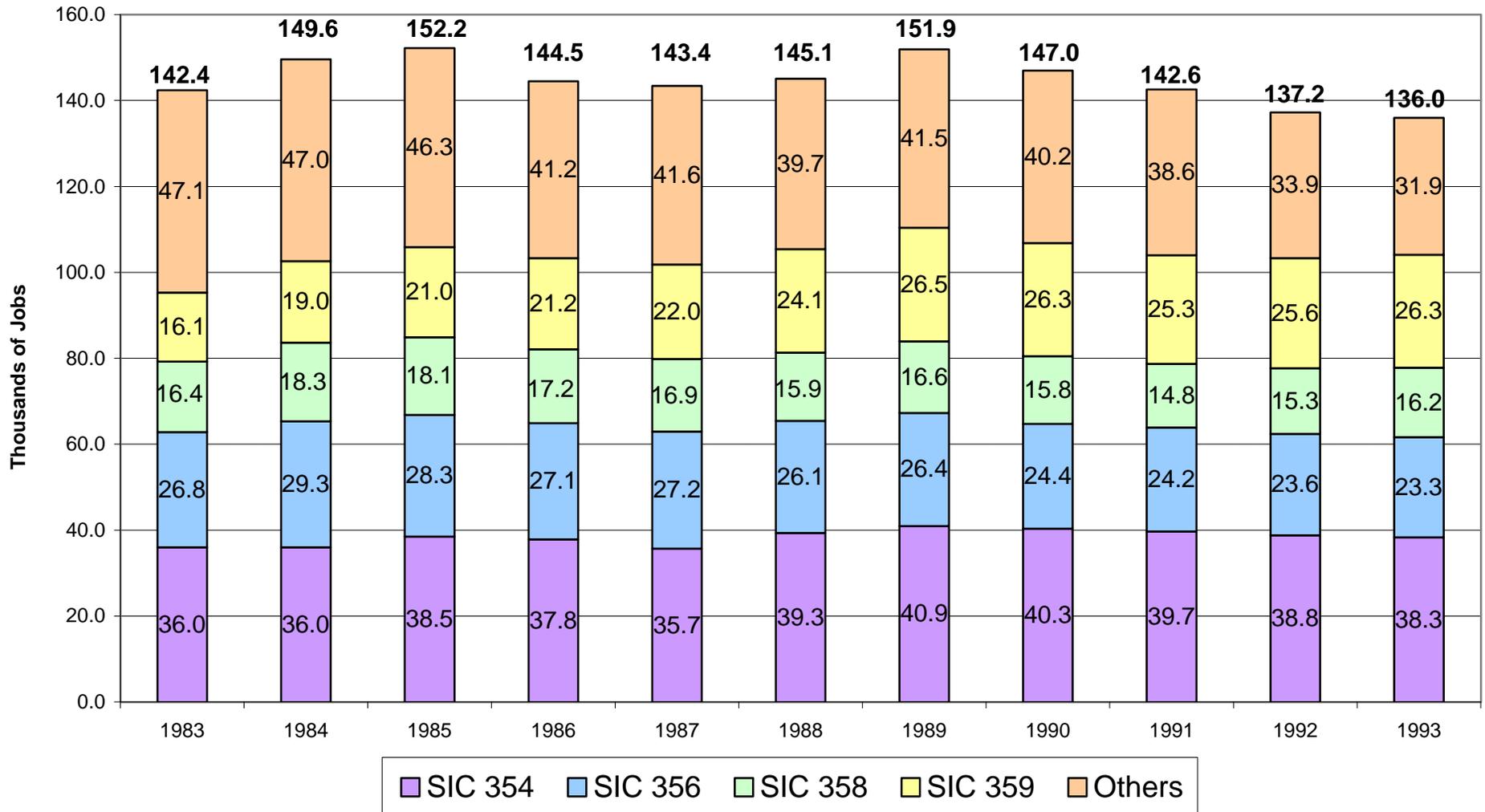
Source: U. S. Bureau of Economic Analysis

SHARE OF THE ECONOMY

Ohio's industrial machinery and equipment industry (SIC 35) produced almost \$7 billion worth of goods in 1992. After adjusting for inflation, this is 3.6 percent of Ohio's gross state product (GSP)--the total value of goods and services produced in the state. By comparison, the U.S. GDP for industrial machinery and equipment is about 2.2 percent of total U.S. GDP. The fact that this major industry is a relatively greater part of Ohio's economy than of the nation's economy reflects its concentration here.

The industrial machinery and equipment industry in Ohio has grown at faster rate than Ohio's economy, becoming a slightly larger part of the state's economy between 1982 and 1992. The same is also true for the industry across the U.S.

Ohio Employment Trends Industrial Machinery and Equipment, 1983-1993



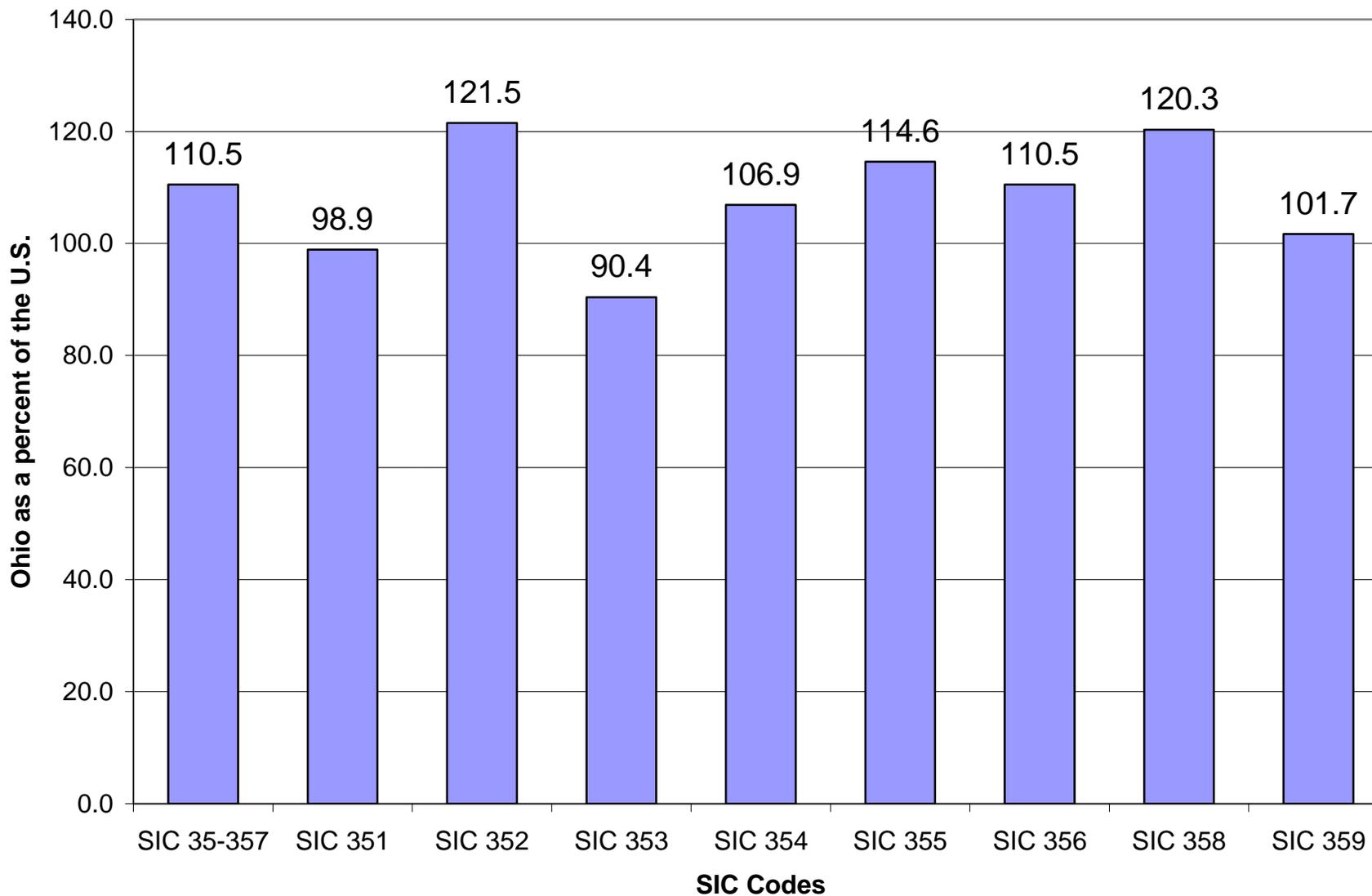
Source: U.S. Census Bureau

EMPLOYMENT TRENDS

The Ohio industrial machinery and equipment industry has shown some fluctuations in employment while losing 9,400 jobs from 1983 through 1993. The industry's job count peaked at 152,200 in 1985 and 151,900 in 1989, dropping to 136,000 in 1993 according to Census Bureau data.

The employment news was not uniformly bad across the industry during this time. Employment has increased substantially in industrial machinery and equipment n.e.c. (SIC 359) and slightly in metalworking machinery (SIC 354). Employment has fluctuated but shown little change in farm and garden equipment (SIC 352) and refrigeration and service machinery (SIC 358). Slight job losses occurred in engines and turbines (SIC 351) and general industrial machinery (SIC 356). Job losses in construction and related machinery (SIC 353) and computer and office equipment (SIC 357) have been relatively steep.

1994 Value Added per Production Worker for SIC 35 excluding SIC 357 (Computer & Office Equipment)



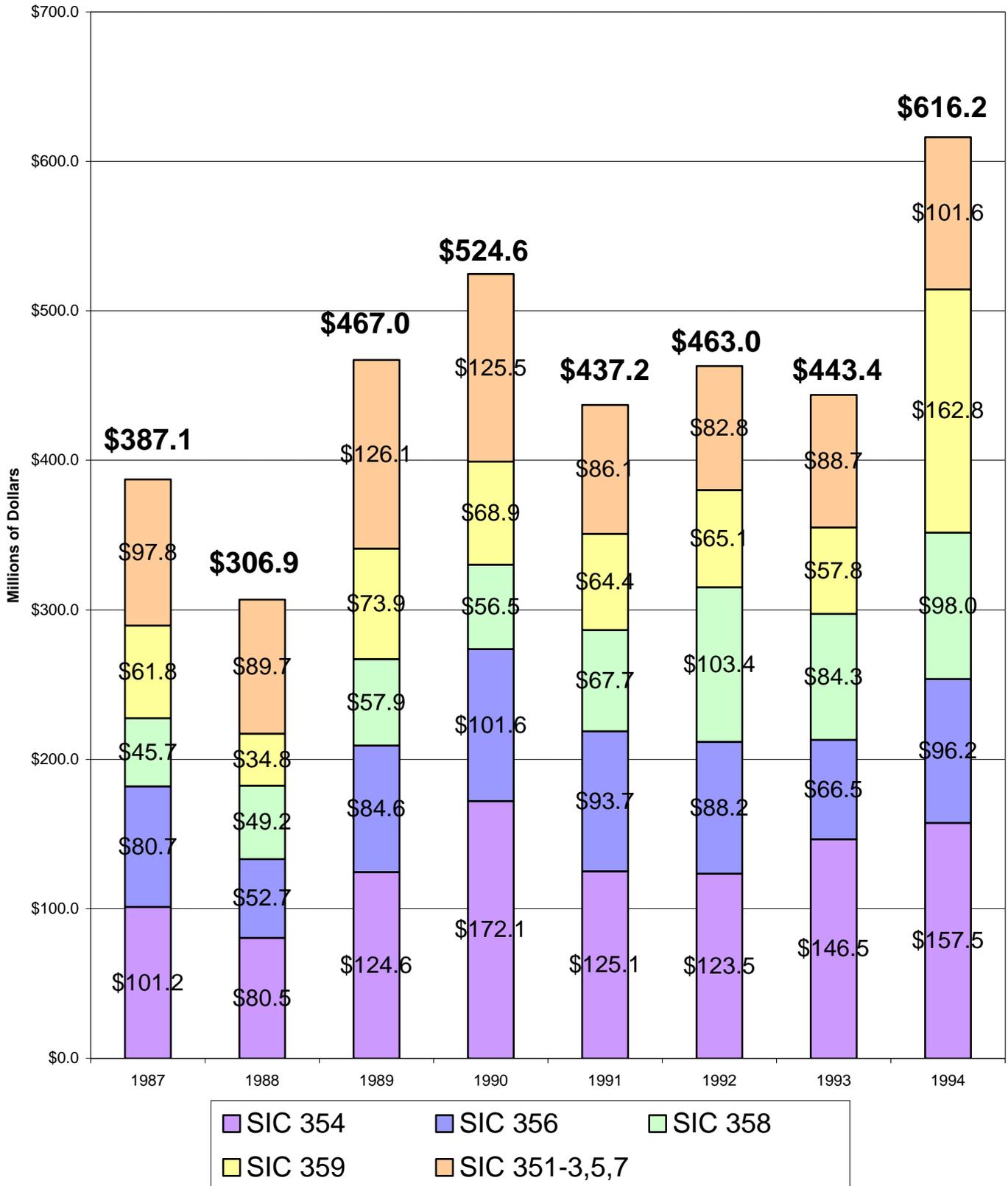
Source: U.S. Census Bureau

VALUE ADDED PER WORKER TRENDS

Two related data sets are used to assess industry output trends. Value added per production worker permits comparisons between industry groups, while constant dollar GSP (gross state product) per production worker removes the effects of inflation and is used to measure changes in the volume of goods produced over time for the industry as a whole.¹

Real industry output (constant dollar GSP per production worker) grew from \$45,100 to \$79,600 per production worker in Ohio from 1982 through 1992. As impressive as this is, it is less than the national average for every year, and actually declines as a percent of the average (see appendix A5a). The reason why this is true becomes apparent when data are analyzed by industry group. Appendix A5b reveals the variation in value added per production worker. Value added per production worker is greatest by far in computer and office equipment (SIC 357). This group is relatively absent from Ohio. A different picture emerges when value added per production worker is recalculated for industrial machinery and equipment excluding computer and office equipment. Value added per production worker in Ohio jumps from 88.6% to 110.5% of the national average (compare appendix A5b with A5c). This is much better than the initial impression based on GSP.

SIC Code 35: New Capital Expenditures in Ohio (in millions of dollars)



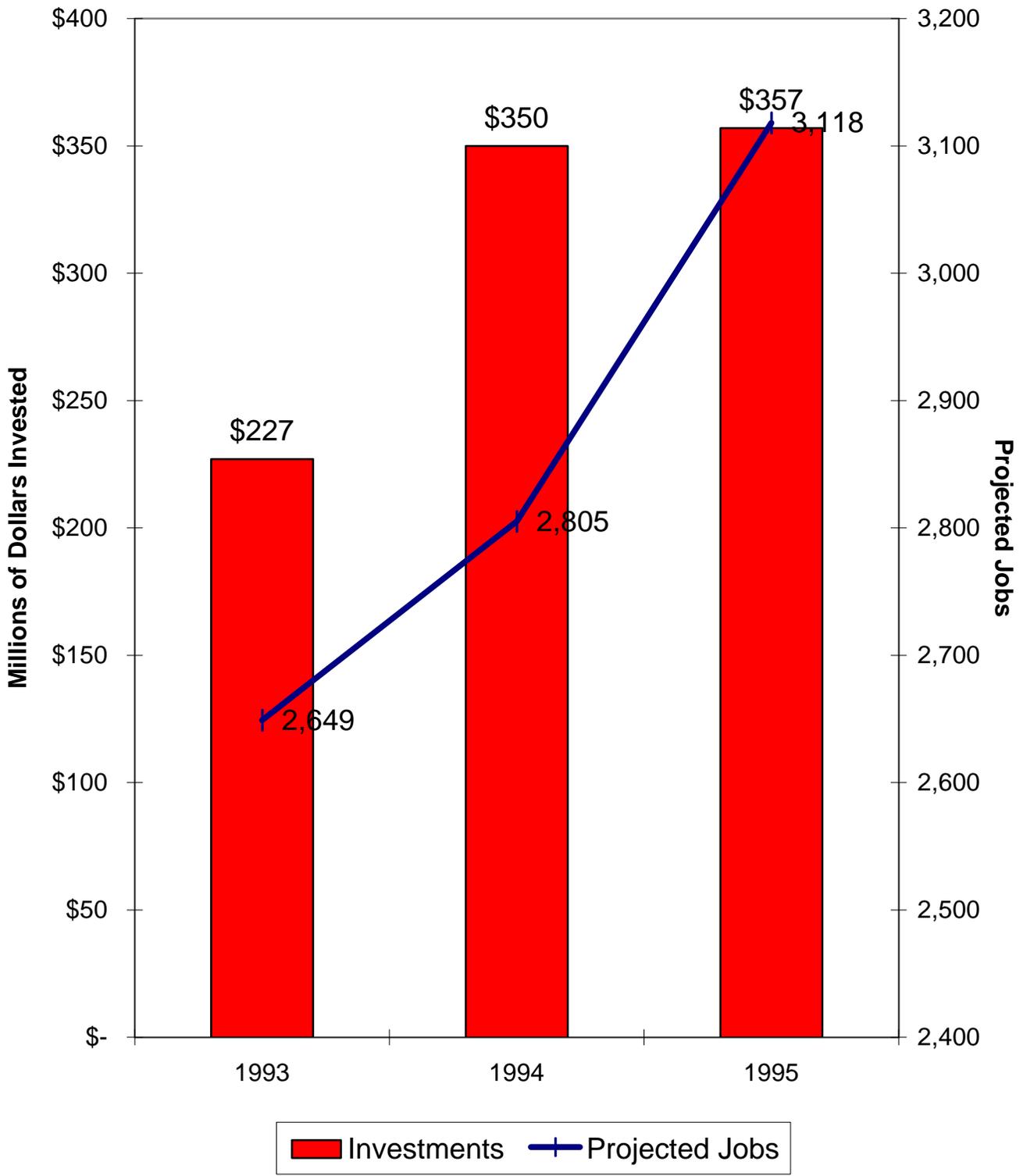
NEW CAPITAL INVESTMENT TRENDS

New capital expenditures in Ohio for the industrial machinery and equipment industry (SIC 35) have grown from \$387.1 million in 1987 to \$616.2 million in 1994, an increase of 59.2 percent. The portion of U.S. expenditures invested in Ohio during this time rose from 5.6% to 6.7%--slightly below the percentages of U.S. industry establishments and employment in Ohio.

The distribution of these expenditures among the industry groups is roughly proportional to the number of people they employ. The largest expenditures in 1994 were in industrial machinery and equipment n.e.c. (SIC 359--\$162.8 million) and metalworking machinery (SIC 354--\$157.5 million). These were followed by refrigeration and service machinery (SIC 358) and general industrial machinery (SIC 356)--both between \$95 and \$100 million.

The combined new capital expenditures for all of the remaining industry groups in 1994--engines and turbines, farm and garden equipment, construction and related machinery, special industry machinery, and computers and office equipment--(SICs 351-3, 355 and 357) were just over \$100 million.

Expansions and Attractions: Ohio's Industrial Machinery & Equipment Industry Investments and Projected Jobs



Source: Ohio Dept. of Development

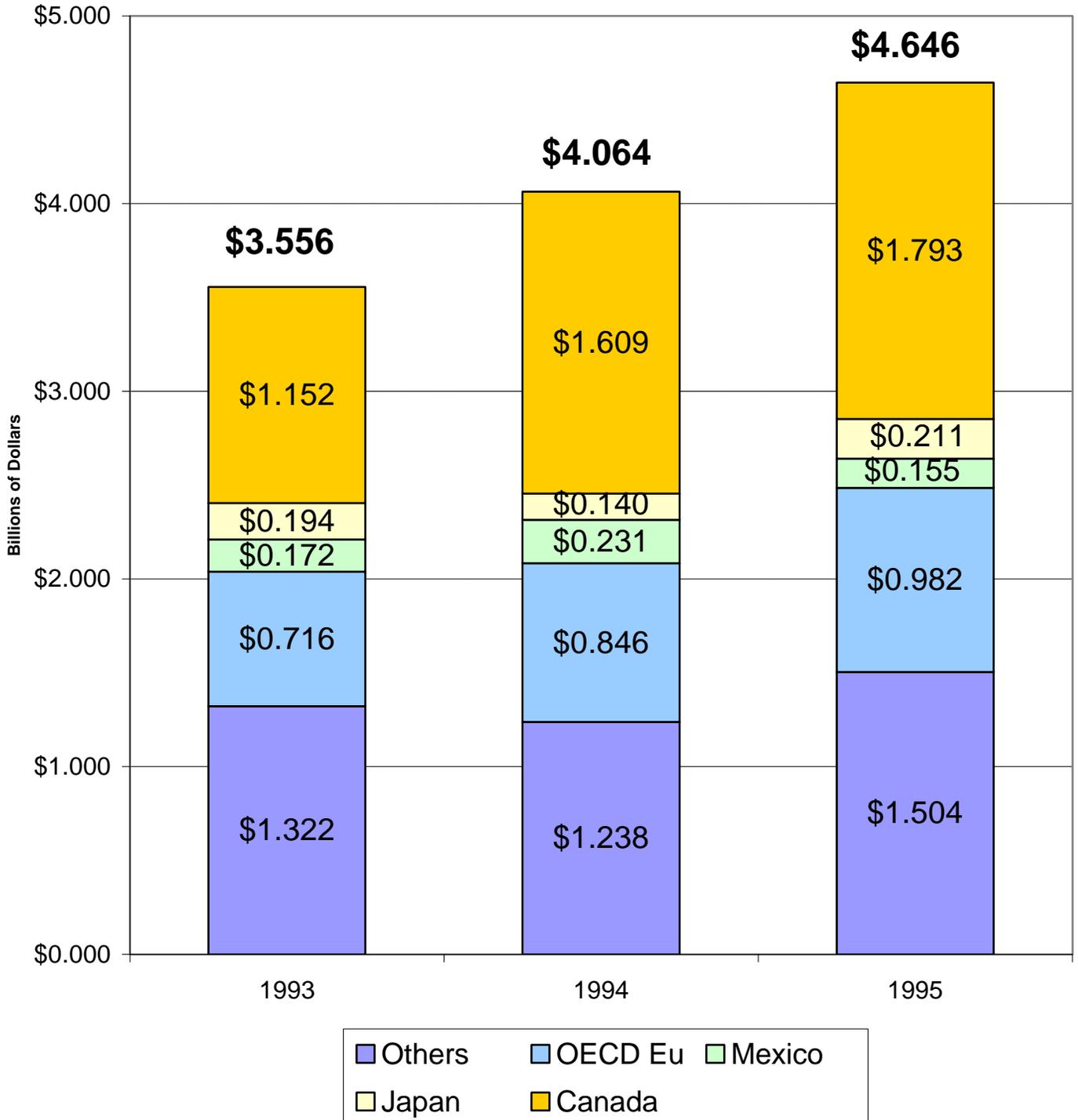
RECENT EXPANSIONS AND ATTRACTIONS

In 1995, the Ohio Department of Development recorded 95 major investments in the Ohio industrial machinery and equipment industry, compared with 84 in 1994 and 62 in 1993.²

These counts are derived from a list of major investments submitted to Site Selection Magazine which annually compiles announced business expansions and attractions by state. A major investment must meet or exceed at least one of the following criteria: 20,000 square feet; \$1 million in land, building, or equipment; or 50 new jobs. Many of the major investments are phased in over a 24 to 36 month cycle with production and employee counts phased in after project completion.

The \$357 million on 95 projects for 1995 is a slight increase from prior years, while the 3,118 projected new jobs is a sharper increase. Collectively, the 241 projects for this three year period represent a total investment of \$934 million. The largest investments during this time came from Aida-Dayton Technologies (\$22 million), Allen Bradley (\$55 million), Armstrong Air Conditioning (\$40 million), Chrysler/Acustar (\$100 million), Lincoln Electric (\$108.5 million), Midwest Industries (\$37.2 million), Simpson Industries (\$21.5 million), and Worthington Cylinder (\$21 million).

SIC Code 35 Exports Originating from Ohio (in billions, rounded to the nearest million dollars)



Source: Massachusetts Institute for Social and Economic Research

EXPORT TRENDS

Appendix table A8 illustrates the relative importance of exports for the industrial machinery and equipment industry. The most reliable data are for 1983 (which follows the unavailable census data for 1982), and the census data for 1987 and 1992.³ In Ohio for those years 13 to 14 percent of the value of industrial and machinery equipment was exported, compared with seven percent of manufactured goods in general. The national figures are slightly greater. The percentage of jobs dependent on exports corresponds with the percentage of value of shipments. Over the years, Ohio has maintained its share of national exports, whether for industrial machinery and equipment or for manufactured products in general--about five to six percent. Unfortunately, this state-level export series has been discontinued.

Data from the Massachusetts Institute for Social and Economic Research offer a more current view of export trends. In contrast to the Census Bureau, this series measures exports from the state where a product is first identified as an export. It shows that SIC 35 export shipments originating in Ohio grew sharply from 1993 to 1995, increasing 30.6 percent compared to an 22.6 percent increase for all export shipments originating in Ohio (Office of Strategic Research, 1996).

The chart to the left illustrates the importance of the Canadian and European markets. Canada received between 32 and 40 percent of Ohio's SIC 35 export shipments in the last three years. The 19 European countries of the Organization for Economic Cooperation and Development (OECD) formed the second largest market, receiving 20 to 21 percent of export shipments at the same time. Yet the rest of the world--developed and developing--cannot be ignored, because these countries combine for at least 40 percent of the market. Over 160 countries imported industrial machinery and equipment from Ohio during those years.

INTRODUCTION

With a few exceptions, manufacturers of industrial machinery and equipment do not make headlines the way the steel or auto producers do. Yet there are good reasons for reporting on the industrial machinery and equipment industry: this manufacturing sector makes the machines which are in turn used to make almost everything, and it employs more people than any other major manufacturing industry in the state (O.B.E.S./L.M.I., 1996).

This report is organized into four sections. The first examines the size and direction of the industrial machinery and equipment industry and its components. This is followed by a geographic profile which presents county-level statistics and the state's leading and notable producers. The third section discusses trends driving industry growth; Ohio's locational advantages; and prospects for future growth. The fourth section is an appendix containing a substantial database for those wishing to further their understanding of industry trends.

Statistics used in this report came primarily from the U.S. Departments of Commerce and Labor and the Ohio Bureau of Employment Services. Detailed references and a glossary of key statistical terms are in the appendices.

INDUSTRY DEFINITION

Many of the nation's industry statistics are grouped according to the Standard Industrial Classification (SIC) System. Establishments producing goods or services which are sufficiently alike are classified in the same industry. A four-digit SIC code is assigned to each industry. Industries which are closely related form an industry group. The first three digits of the code indicate the group to which the industries belong. In turn, industry groups are part of a major industry. The first two digits of the SIC code indicate the major industry to which the industries belong.

The industrial machinery and equipment industry (SIC code 35) is divided into nine groups: engines and turbines (SIC 351), farm and garden machinery (SIC 352), construction and related machinery (SIC 353), metalworking machinery (SIC 354), special industry machinery (SIC 355), general industrial machinery (SIC 356), computer and office equipment (SIC 357), refrigeration and service machinery (SIC 358), and the catch-all industrial machinery n.e.c. (not elsewhere classified) (SIC 359). See the appendix of SIC code definitions for a description of the industries within each group.

Industrial machinery and equipment excludes electronic and other electrical equipment (SIC 36), although machines powered by electric motors are generally included. (Household appliances are an exception-to-the-exception: they are classified in SIC 363.) Computers and peripheral equipment, calculators, typewriters, cash registers, automatic teller machines and voting machines are included because of their non-electrical origin, but many of their electronic components are classified in SIC 36. Off-road trucks and trucks for industrial use are included in construction and related machinery, but transportation equipment is classified in SIC 37. Measuring, analyzing and controlling instruments, photographic, medical and optical goods, and watches and clocks are classified in SIC 38.