Ohio | Department of Development

Policy Research and Strategic Planning
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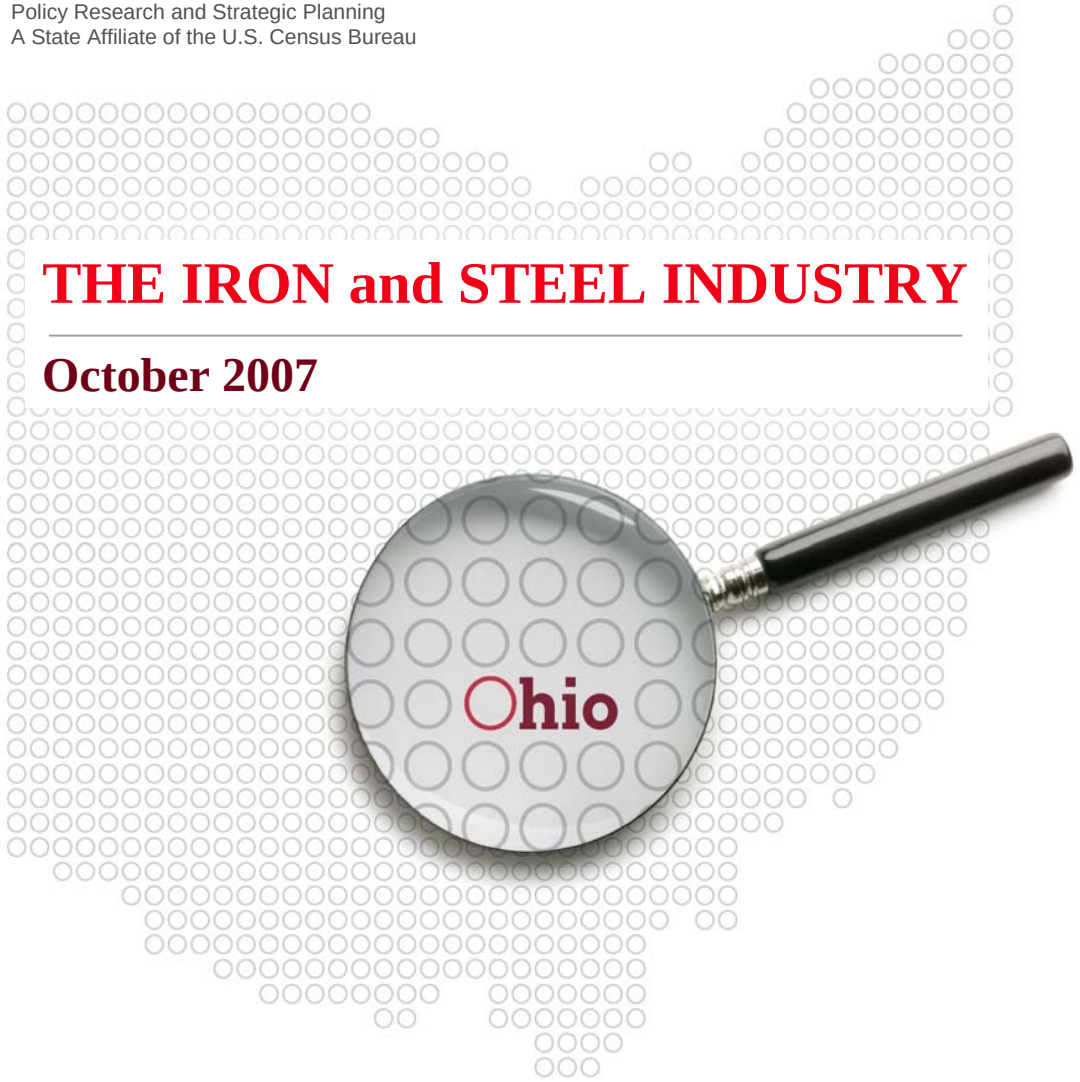
THE IRON and STEEL INDUSTRY

October 2007



Ted Strickland, Governor of Ohio
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Ohio Department of Development

THE OHIO IRON AND STEEL INDUSTRY

OCTOBER 2007

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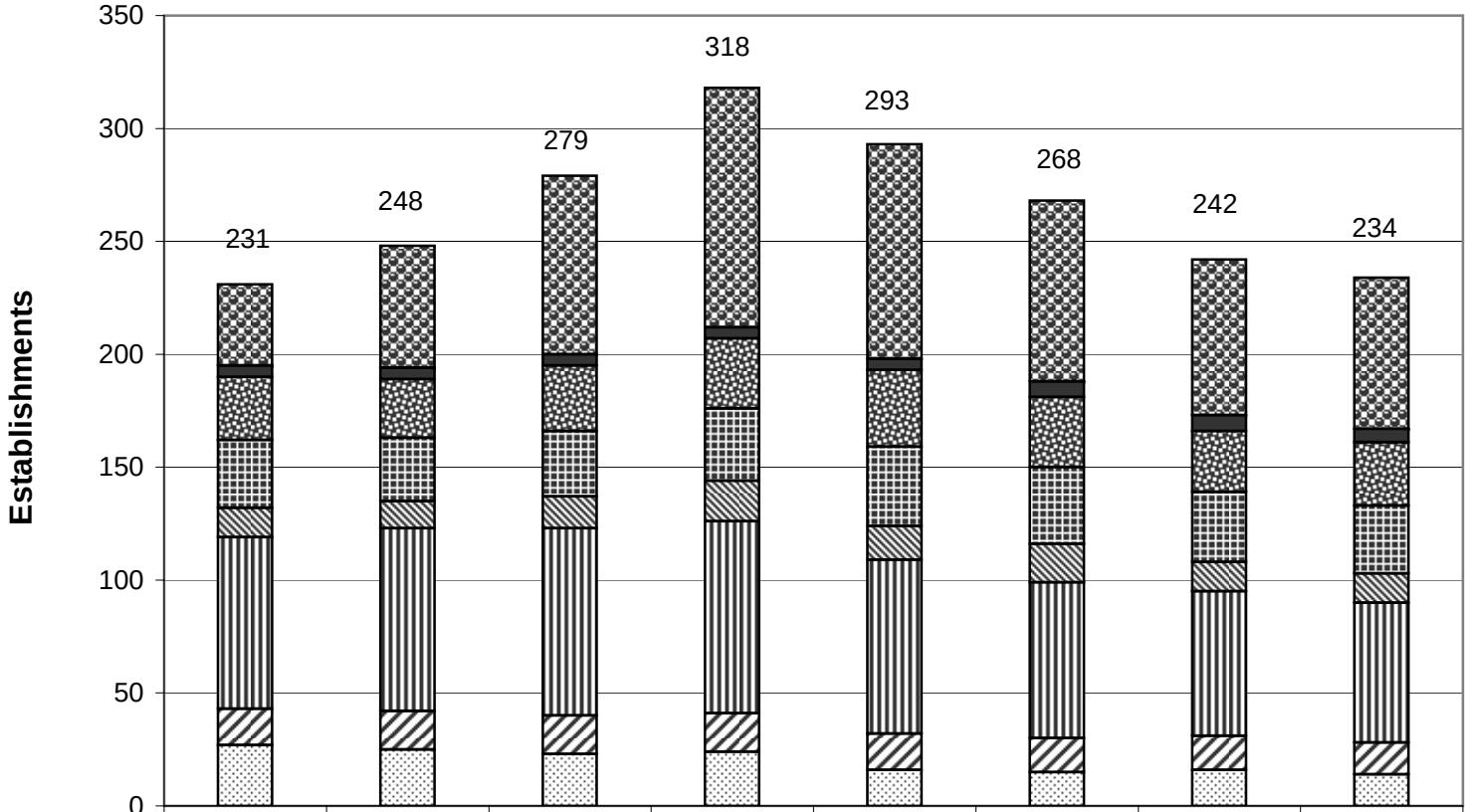


	1998	1999	2000	2001	2002	2003	2004	2005
331111: Iron & steel mills	36	54	79	106	95	80	69	67
331112: Electrometallurgical ferroalloys	5	5	5	5	5	7	7	6
33121: Iron, steel pipe & tubes	28	26	29	31	34	31	27	28
331221: Rolled steel shapes	30	28	29	32	35	34	31	30
331222: Steel wire drawing	13	12	14	18	15	17	13	13
331511: Iron foundries	76	81	83	85	77	69	64	62
331512: Steel investment foundries	16	17	17	17	16	15	15	14
331513: Steel foundries (exc. investment)	27	25	23	24	16	15	16	14

Source: U.S. Census Bureau.

ESTABLISHMENTS

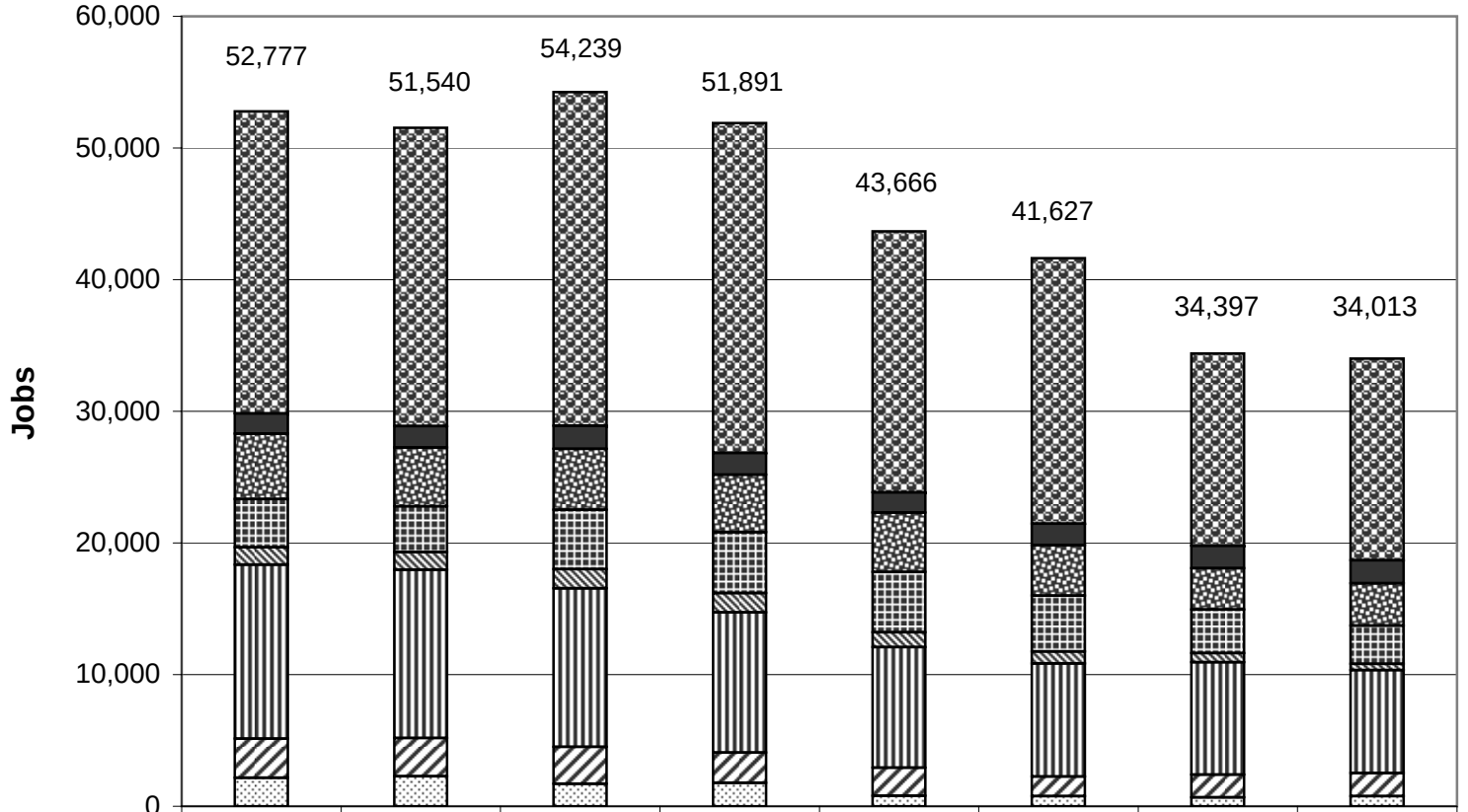
The chart above shows that the number of iron and steel industry establishments in Ohio actually rose from 231 in 1998 to 318 in 2001 before declining to 234 in 2005. This overall pattern of change is the aggregation of different changes in the specific industries. Most notably, the number of iron and steel mills (331111) rose from 36 in 1998 to 106 in 2001 and then dropped to 67 by 2005, with a net increase of 31 establishments. This contrasts with the increase of iron foundries (331511) from 76 in 1998 to 85 in 2001, and the subsequent decline to 62 in 2005 – a net change of -14. The number of steel foundries (excluding investment foundries - 331513) fell by 13. Other industries – electrometallurgical ferroalloys (331112), iron and steel pipes and tubes (33121), rolled steel shapes (331221), steel wire drawing (331222), and steel investment foundries (331512) – fluctuated with little or no net change.

What happened in Ohio was similar to what happened across America. The number of iron and steel mills increased from 1998 to 2001 and decreased until 2005, when it rose. There were more mills in 2005 than in 1998. The number of ferrous foundries (33151) also rose from 1998 to 2001 and decreased thereafter, with a net result of fewer foundries in 2005 than in 1998. The number of plants making products from purchased steel (3312) also rose and fell, but with a smaller net loss – both in absolute and percentage change – than ferrous foundries.

It is also interesting to compare changes in the iron and steel industry with the manufacturing sector in general. The number of iron and steel industry establishments in Ohio rose and fell from 1998 to 2005 with little net change. The changes across the nation as a whole were similar, but slightly more positive for the industry. Meanwhile, the total number of manufacturing establishments steadily declined from 1998 to 2005: by 7.9% in Ohio, and 9.0% throughout the U.S.

See Table A7

Employment Trends in Ohio's Iron & Steel Industry: 1998-2005



	1998	1999	2000	2001	2002	2003	2004	2005
331111: Iron & steel mills	22,948	22,669	25,351	25,061	19,822	20,159	14,610	15,341
331112: Electrometallurgical ferroalloys	1,531	1,637	1,750	1,639	1,531	1,624	1,705	1,731
33121: Iron, steel pipe & tubes	4,961	4,459	4,617	4,368	4,512	3,837	3,139	3,231
331221: Rolled steel shapes	3,676	3,466	4,515	4,631	4,583	4,263	3,306	2,903
331222: Steel wire drawing	1,321	1,338	1,465	1,465	1,139	913	703	466
331511: Iron foundries	13,197	12,791	12,037	10,650	9,154	8,579	8,526	7,827
331512: Steel investment foundries	2,983	2,894	2,805	2,310	2,132	1,488	1,725	1,735
331513: Steel foundries (exc. investment)	2,160	2,286	1,699	1,767	793	764	683	779

Source: U.S. Census Bureau.

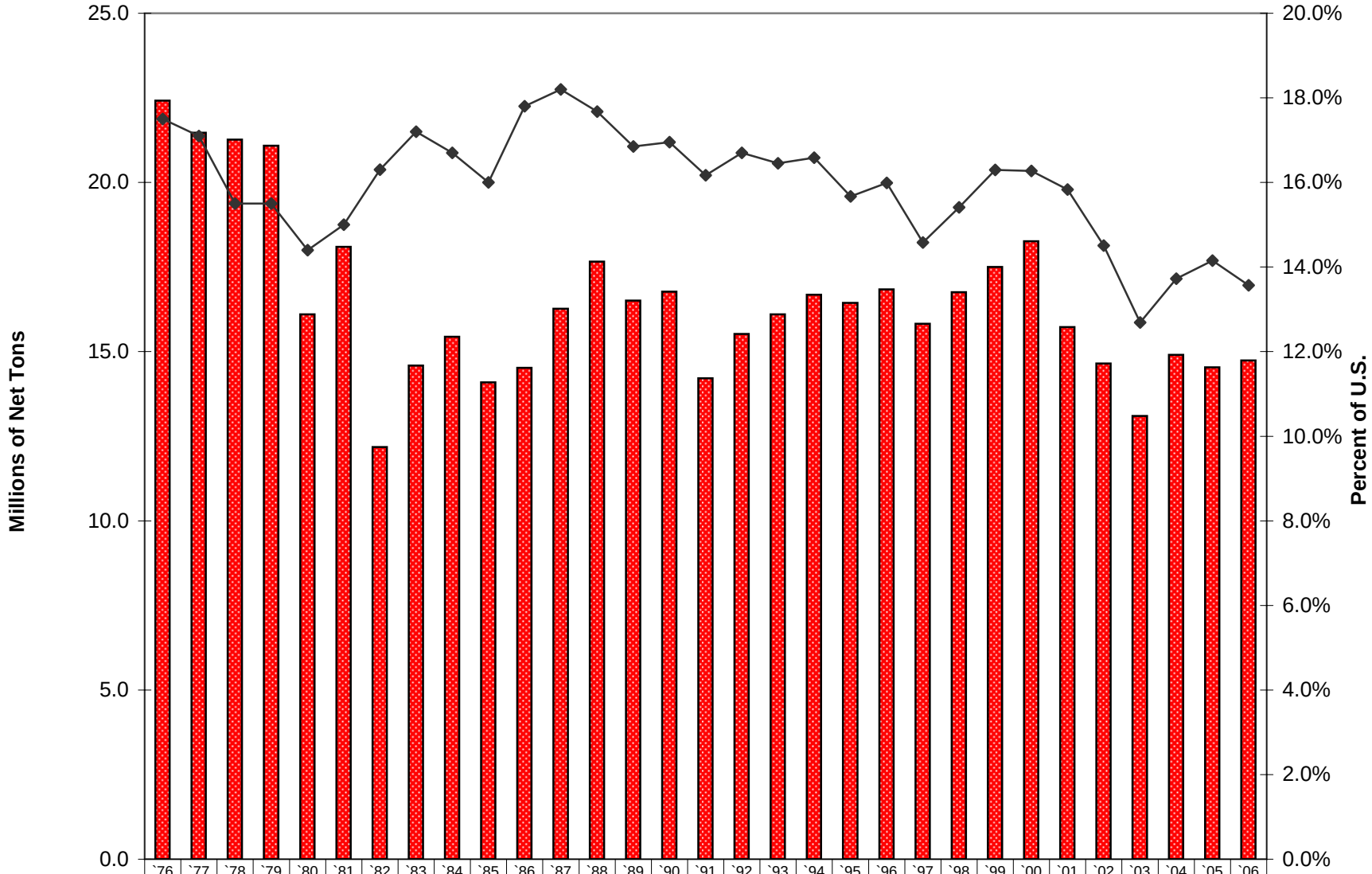
EMPLOYMENT

The chart above shows iron and steel industry employment in Ohio peaking in 2000 and dropping thereafter. The decline appears to have slowed between 2004 and 2005. The net change was a loss exceeding 18,700 jobs. The greatest number of jobs lost occurred in iron and steel mills (NAICS 331111), which declined continuously from over 22,900 to some 15,300 – a drop of one-third. It was followed by a loss of well over 5,300 in ferrous foundries (33151), a 28.9% decline.[6] Other industries with net losses exceeding 1,000 jobs were steel foundries (331512 & 3) and pipe and tube production from purchased steel (33121). Fewer than 1,000 jobs were lost in each of the rolling and drawing industries (33122). While the job losses in these industries were smaller in magnitude, they were often as great or greater on a percentage basis. The only bright spot in employment was electrometallurgical ferroalloys, which gained 200 jobs – an increase of 13.1%. Nevertheless, the iron and steel industry as a whole suffered proportionately greater job losses than the encompassing manufacturing sector – 35.6% vs. 20.3%.

What happened in Ohio was part of what happened across the country. Employment in every individual iron and steel industry was lower in 2005 than it was in 1998. The proportional decline in the industry as a whole was greater than in manufacturing in general – 28.6% vs. 19.3%, and employment fell proportionately greater in foundries than in the other industry groups – 30.6% vs. 26.2% and 29.8%.

See Table A8

Raw Steel Production in Ohio, 1976-2006



	`76	`77	`78	`79	`80	`81	`82	`83	`84	`85	`86	`87	`88	`89	`90	`91	`92	`93	`94	`95	`96	`97	`98	`99	`00	`01	`02	`03	`04	`05	`06
Raw Steel Production	22.4	21.5	21.3	21.1	16.1	18.1	12.2	14.6	15.4	14.1	14.5	16.3	17.7	16.5	16.8	14.2	15.5	16.1	16.7	16.4	16.8	15.8	16.8	17.5	18.3	15.7	14.6	13.1	14.9	14.5	14.7
Percent of U.S.	17.5	17.1	15.5	15.5	14.4	15.0	16.3	17.2	16.7	16.0	17.8	18.2	17.7	16.9	17.0	16.2	16.7	16.5	16.6	15.7	16.0	14.6	15.4	16.3	16.3	15.8	14.5	12.7	13.7	14.2	13.6

Sources: American Iron and Steel Institute, International Iron and Steel Institute, Ohio Steel Industry Advisory Council.

RAW STEEL PRODUCTION

The chart above illustrates the last 31 years of raw steel production in Ohio, and with it, the changes and continuities that characterize the industry. One of these is the highly cyclical nature of the industry. Years associated with recessions – 1980, 1982, 1991, and 2001 – show notably lower levels of production when compared with the preceding years and (usually) the following years. Declines in other years, though, may reflect significant changes at individual facilities in the state; for example, a strike at WHX in 1997 or LTV's bankruptcy in 2002 and 2003. Raw steel production rose in the years following the resolution of the problems.

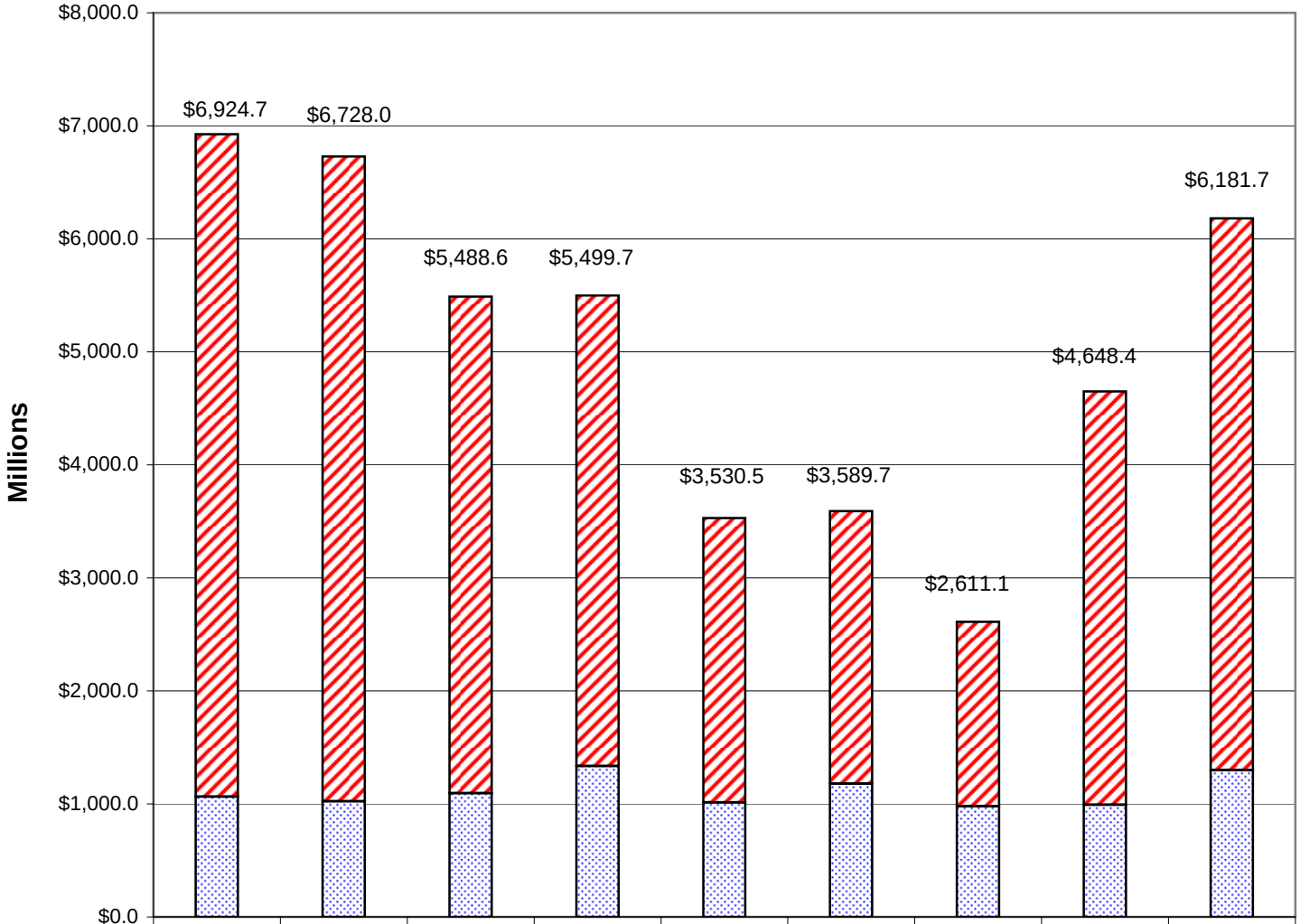
Another change evident above is not cyclical. Raw steel production in Ohio exceeded 20 million tons (MT) every year before 1980. (Additional data in table A9 extend back to 1969, and show 1975 to be – just barely – an exception to the preceding statement.) By contrast, production in Ohio has never been above 20MT after 1979. With the exceptions of 1982 and 2003 for reasons previously cited, production here has fluctuated between 14.1MT and 18.3MT from 1980 through 2006. This generally lower level of output is consistent with a structural change in the U.S. economy noted by industry analysts: less consumption of iron and steel. (See the Overview of the Industry for further details.)

Steel production in Ohio typically ranges from 14% to 17% of the national total despite the sometimes dramatic ups and downs in tonnage, although it has dipped below that range in three of the last four years.

Bearing these facts in mind, the data show no definitive long-term trend away from production in Ohio. However, it appears that the proportion of U.S. steel production outside of Ohio has grown.

See Table A9

Value-Added by Group in Ohio, 1997-2005



	1997	1998	1999	2000	2001	2002	2003	2004	2005
3311: Iron & Steel Mills & Ferroalloys	$5,861.7	$5,705.4	$4,393.5	$4,165.5	$2,517.7	$2,409.5	$1,631.3	$3,656.2	$4,883.3
3312: Products from Purchased Steel	$1,063.0	$1,022.6	$1,095.1	$1,334.1	$1,012.8	$1,180.2	$979.8	$992.2	$1,298.3

Source: U.S. Census Bureau.

VALUE ADDED – A BROADER MEASURE OF ECONOMIC OUTPUT

Value-added data are a broader measure of industrial activity than raw steel production alone because the former include iron and steel mill products, whether made at the mill or from purchased steel (NAICS 3311 and 3312, respectively.) (The Annual Survey of Manufactures does not publish annual figures for subgroups, including ferrous metal foundries – 33151.) The chart above shows an unmistakable decline in the value-added of iron, steel, and ferroalloy output (3311) in Ohio from 1997 through 2003, and increasing output in 2004 and 2005. These changes incorporate the consequences of LTV's bankruptcy as well as the recession. They also reflect resumption of some operations by its successor, the International Steel Group (now part of ArcelorMittal) and the subsequent economic expansion.

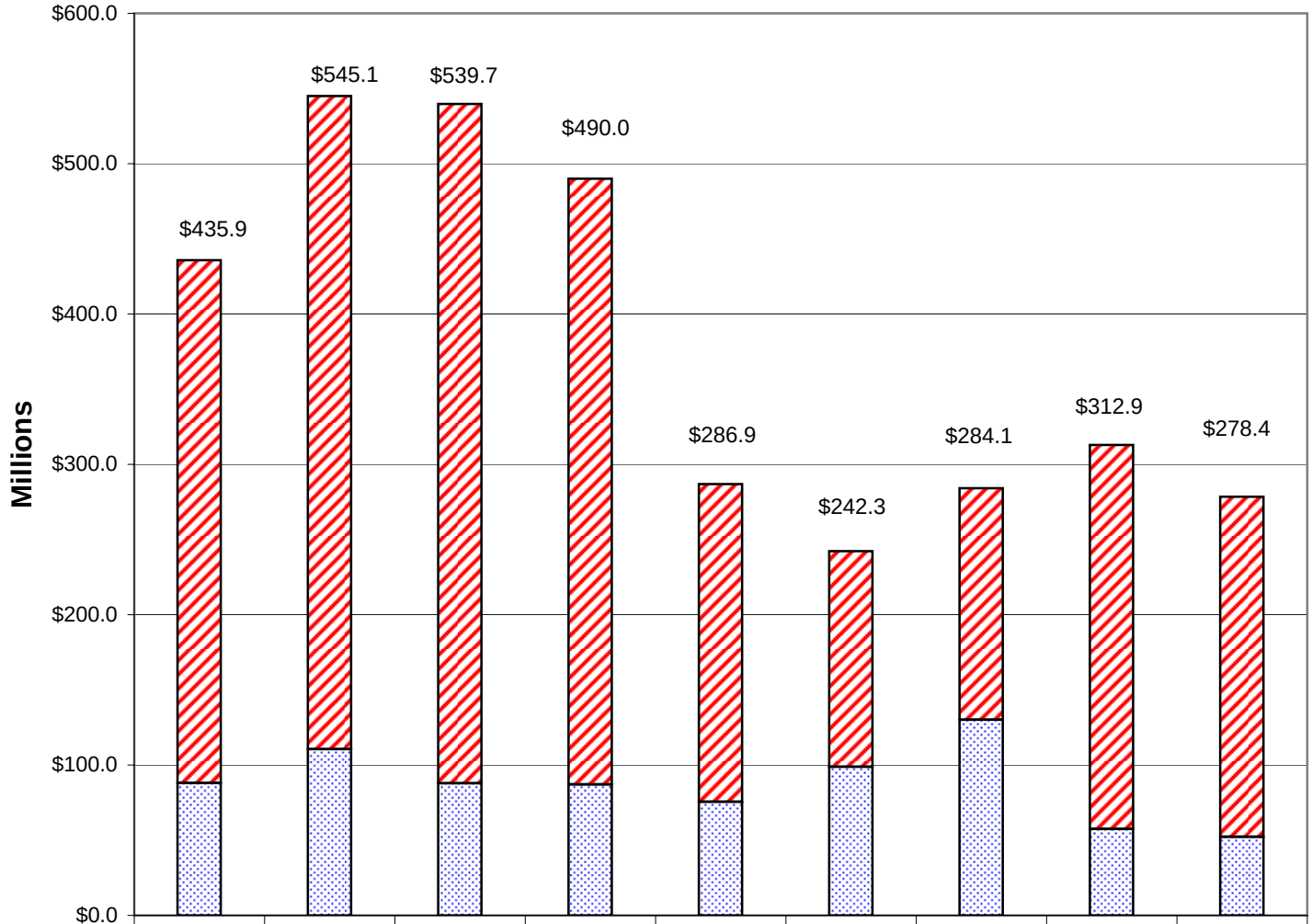
This is a stark contrast to the value-added in manufacturing products made from purchased steel (3312), which fluctuated, but finished higher in 2005 than in 1997. (Because value-added figures are not adjusted for inflation, the net change in real output is unknown.)

What happened in Ohio during this time was more or less what was happening throughout the American iron and steel industry. Data in appendix table A10 show drops of 42.0% iron, steel and ferroalloy production and 16.0% in products made from purchased steel during the 1997-2001 period. The subsequent recovery saw increases of 123.3% and 26.5%, respectively, in value-added by 2005. (Again, no adjustment for inflation has been made.)

Throughout these ups and downs, the percentage of products-made-from-purchased-steel in Ohio fluctuated around 17.5% of the national total. This contrasts with the percentage of iron, steel and ferroalloy products made in Ohio. That percentage fell from 23.0% in 1997 to 9.3% in 2003, and rose to 14.8% by 2005. Whether it will continue to rise remains to be seen, but for now, plants in Ohio play a smaller role in the iron and steel industry than they did in the past.

See Table A10

Capital Expenditures by Group in Ohio, 1997-2005



	1997	1998	1999	2000	2001	2002	2003	2004	2005
3311: Iron & Steel Mills & Ferroalloys	$347.8	$434.6	$451.9	$402.9	$211.4	$143.4	$154.1	$255.5	$226.2
3312: Products from Purchased Steel	$88.1	$110.5	$87.8	$87.2	$75.5	$98.8	$130.1	$57.4	$52.2

Source: U.S. Census Bureau.

CAPITAL EXPENDITURES BY GROUP

Capital expenditures are funds spent for buildings and equipment used in manufacturing. The chart above shows capital expenditures in Ohio first rising from $435.9 million (M) in 1997 to roughly $540M in 1998 and 1999 before dropping to around $280M in 2001, 2003, and 2005. They were notably lower in 2002 and higher in 2004. However, even in a capital-intensive industry noted for episodic expenditures, the level of spending appears significantly lower after 2000 than before 2001.

The chart above also shows that the vast majority of expenditures went for iron, steel, and ferroalloy production (NAICS 3311) – and that is where most of the reduction in expenditures has occurred. Capital expenditures in the group averaged $409.3M per year for 1997-2000 and $198.1M for 2001-2005 – a little less than one-half. This is a marked contrast with the recent history of steel products made from purchased steel (NAICS 3312); annual capital expenditures for the latter averaged $93.4M and $82.8M for the corresponding periods.

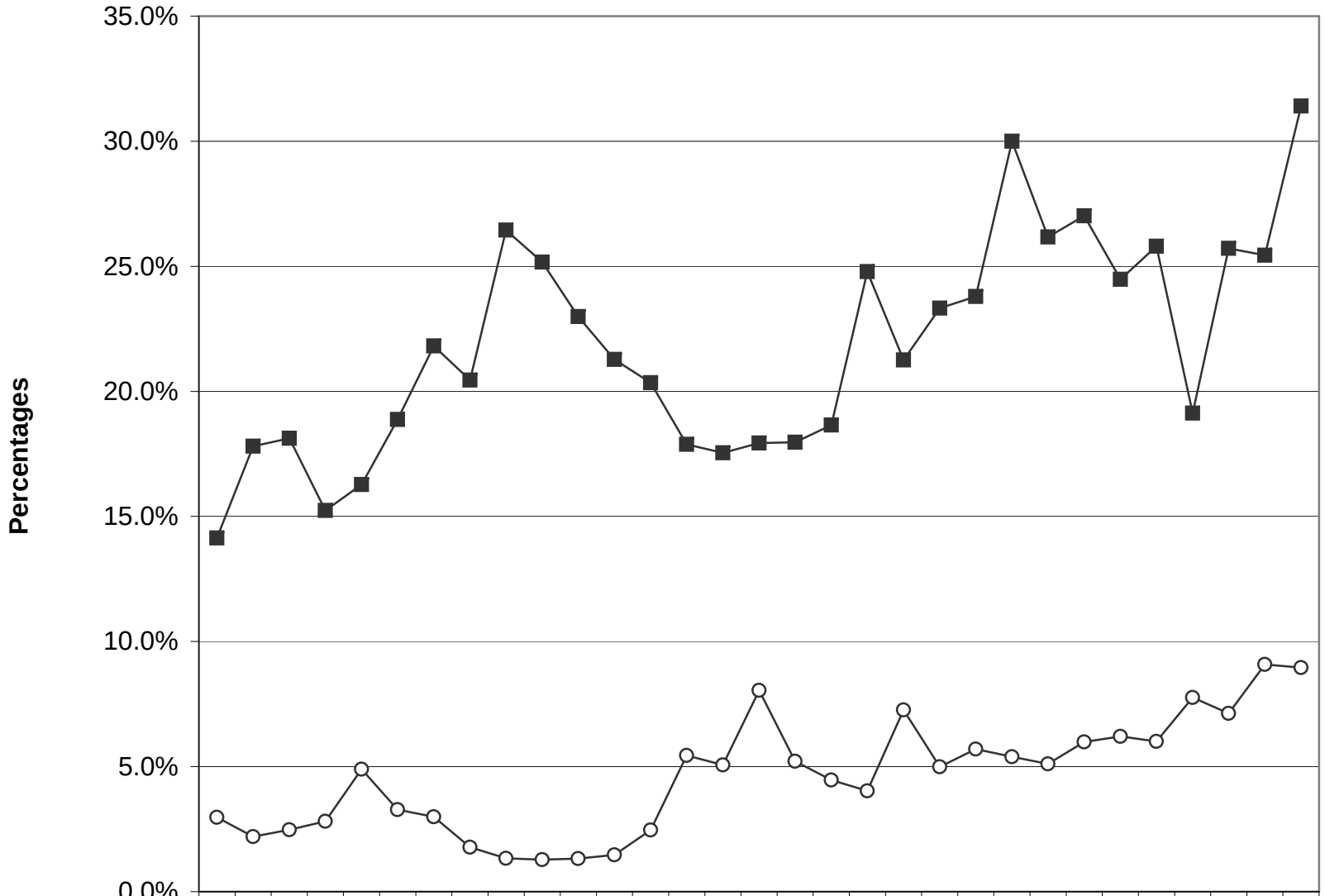
Data for the U.S. in appendix table A11 tell a similar story: between the two groups, the majority of capital expenditures are made for iron, steel, and ferroalloy production; average annual expenditures for that group in 2001-2005 were about one-half of what they were in 1997-2000, while average annual expenditures in products made from purchased steel fell considerably less from the earlier period to the later. Yet the pattern of change in the national data could also be interpreted as evidence for a decline and partial recovery in capital expenditures for iron, steel, and ferroalloys, while expenditures for the products-from-purchased-steel group have fallen continuously, except for some interruptions.

Capital expenditures in Ohio by companies have varied by industry group in another way. Those for iron, steel, and ferroalloys have been, on average, slightly less than proportional to the value-added originating here: 15.8% vs. 16.9%, respectively, of national totals. Those for products-made-from-purchased-steel have been slightly more than proportional to the value-added here, averaging 19.6% vs. 17.5% of the national totals. Overall, the proportion of industry expenditures going into Ohio averaged 97.3% of the proportion of value-added here (see tables A9 and A10). Given the year-to-year variability of value-add and capital expenditures, it seems fair to say that the industry *intends* to continue production in Ohio, even though output falls.

As with value-added, annual capital expenditure data for the ferrous metal foundries subgroup (NAICS 33151) are not available from the Annual Survey.

See Tables A10 & A11

Imports and Exports of Steel Mill Products: 1976-2006



	`76	`77	`78	`79	`80	`81	`82	`83	`84	`85	`86	`87	`88	`89	`90	`91	`92	`93	`94	`95	`96	`97	`98	`99	`00	`01	`02	`03	`04	`05	`06
Exports as Percent of Total Shipments	3.0	2.2	2.5	2.8	4.9	3.3	3.0	1.8	1.3	1.3	1.3	1.5	2.5	5.4	5.1	8.0	5.2	4.5	4.0	7.3	5.0	5.7	5.4	5.1	6.0	6.2	6.0	7.8	7.1	9.1	9.0
Imports as Percent of Apparent Supply	14.1	17.8	18.1	15.2	16.3	18.9	21.8	20.5	26.4	25.2	23.0	21.3	20.3	17.9	17.5	17.9	18.0	18.7	24.8	21.3	23.3	23.8	30.0	26.2	27.0	24.5	25.8	19.1	25.7	25.4	31.4

Sources: American Iron & Steel Institute, Larkin

EXPORTS AND IMPORTS OF STEEL MILL PRODUCTS

The graph above illustrates two distinct-but-related phenomena: the variable-but-generally-greater importance of exports for steel producers and the variable-but-generally-greater importance of imports for consumers of steel mill products (apparent supply is equivalent to consumption). Exports have been relatively more important for steel manufacturers since 1989, when they first rose above 5% of total shipments. Although exports fell below 5% in 1993 and 1994, they have become increasingly important since 1996, rising to 9.1% in 2005. Data in table A12 show that exports have grown from 929,000 tons in 1986 to 9,728,000 tons in 2006. (Data also extend back to 1969.) Analysts cite a number of factors in explaining these changes. The generally weaker value of the dollar in recent years – especially compared with the mid-1980s – makes U.S. steel mill products relatively more affordable. Some also note the rapid and sizable economic growth of China as a locus of increased demand (Larkin, 2007). The growth of exports also may have been facilitated by the reduction of trade barriers.

The graph above shows that imports play a highly variable but comparatively more significant role in meeting the demand for steel mill products in America, ranging from 14.1% of the apparent supply in 1976 to a record 31.4% in 2006.[7] Imports began taking a larger share of the American market in the 1960s initially because foreign producers had more efficient equipment and lower labor costs. Over the years, though, analysts have cited a number of additional factors to explain why imports play a relatively large role in domestic consumption. These included low transportation costs and the higher prices in America (Matthews, 2007b), subsidies provided by the governments of foreign steel makers, the relative openness of the American market, and the high value of the dollar, which made imports relatively inexpensive (Larkin, 2003). However, the value of the dollar does not explain the greater role of imports beginning in the mid-1990s. Instead, Larkin (2007: 19) notes that some domestic steel makers had reduced their primary production capacity so much that they had to import semi-finished products in order to meet the demand for finished products.

U.S.-based steel companies were not idle as foreign producers gained market share. They sought and received tariffs to counter what they claimed were unfair trade practices. At the same time, though, foreign producers and domestic steel consumers argued their cases in response. Thus the federal government has granted tariff requests and subsequently granted exemptions from those tariffs. In addition, at least one international organization has ruled an American steel tariff unjustified. Therefore, it seems that U.S.-based steel companies cannot rely on tariffs alone to deal with foreign competition. Even market forces – the relatively lower value of the dollar and high demand from China – have not consistently reduced imports. Foreign competition remains significant for domestic producers (Larkin, 2003, 2007).

Regardless of the reason why, domestic consumers of steel like imports because inexpensive steel helps them compete at home and abroad. Imports have become an integral part of steel supplies, and their elimination would cause problems

for steel consumers because domestic steel makers usually lack the capacity to replace imports. Put differently, the consumption of steel mill products has been greater than domestic capacity in nine of the 11 latest years for which data are available (1996-2006). During these same 11 years, imports ranged from 19.1% to 31.4% of apparent supply (which is equivalent to consumption), averaging 25.8% (Larkin, 2007: 1).

See Table A12