

Manifold Business Form Printing

1997

Issued December 1999

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1997 Economic Census

Manufacturing

Industry Series



U S C E N S U S B U R E A U

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U.S. Department of Commerce
Economics and Statistics Administration
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CONTENTS

Introduction to the Economic Census	1
Manufacturing	5

TABLES

1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997	7
2. Industry Statistics for Selected States: 1997	7
3. Detailed Statistics by Industry: 1997	8
4. Industry Statistics by Employment Size: 1997.....	9
5. Industry Statistics by Industry and Primary Product Class Specialization: 1997	9
6a. Products Statistics: 1997 and 1992.....	10
6b. Product Class Shipments for Selected States: 1997 and 1992 .	11
7. Materials Consumed by Kind: 1997 and 1992.....	13

APPENDIXES

A. Explanation of Terms	A-1
B. NAICS Codes, Titles, and Descriptions	B-1
C. Coverage and Methodology.....	C-1
D. Geographic Notes	--
E. Metropolitan Areas	--
F. Footnotes for Products Statistics and Materials Consumed by Kind	--
G. Comparability of Product Classes and Product Codes: 1997 to 1992.....	G-1

-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

AVAILABILITY OF ADDITIONAL DATA

Reports in Print and Electronic Media

All results of the 1997 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

Special Tabulations

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673
Service Sector Statistics Division 301-457-2668

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at www.census.gov/econguide. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at www.census.gov/econ/www/history.html.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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Manufacturing

SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

COMPARABILITY OF THE 1992 AND 1997 CENSUSES

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

DISCLOSURE

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies ¹	All estab-lish-ments ²	All employees		Production workers			Value added by manufac-ture (\$1,000)	Cost of materials (\$1,000)	Value of ship-ments (\$1,000)	Total capital ex-pen-di-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
323116	Manifold business form printing	719	1 039	56 423	1 690 008	39 431	76 131	1 088 048	5 706 765	3 928 756	9 631 710	258 580
276100	Manifold business forms	N	921	40 815	1 293 444	28 657	56 241	823 029	4 236 354	3 511 565	7 738 705	208 849
278210	Blankbooks & looseleaf binders (pt)	N	118	15 608	396 564	10 774	19 890	265 019	1 470 411	417 191	1 893 005	49 731

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.
²Includes establishments with payroll at any time during the year.

Table 2. Industry Statistics for Selected States: 1997

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	All establishments		All employees		Production workers			Value added by manufac-ture (\$1,000)	Cost of materials (\$1,000)	Value of ship-ments (\$1,000)	Total capital ex-pen-di-tures (\$1,000)	
	E ¹	Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)					Wages (\$1,000)
323116, MANIFOLD BUSINESS FORM PRINTING												
United States	2	1 039	573	56 423	1 690 008	39 431	76 131	1 088 048	5 706 765	3 928 756	9 631 710	258 580
Alabama	-	10	7	735	17 063	535	992	13 162	43 079	23 694	67 502	932
Arizona	-	23	9	644	18 905	459	919	12 144	55 348	36 447	91 845	5 042
California	1	116	60	5 426	161 471	3 771	7 258	104 548	523 068	368 669	892 247	25 767
Colorado	-	17	8	1 978	41 295	864	1 597	20 774	196 278	54 768	250 671	3 958
Connecticut	4	12	7	424	14 091	368	822	10 650	50 996	34 399	85 381	4 819
Florida	1	39	20	1 364	43 304	888	1 601	23 844	116 545	111 991	230 184	7 020
Georgia	3	32	20	1 877	45 823	1 458	2 751	33 730	175 568	124 480	298 026	8 886
Illinois	-	67	33	3 322	114 521	2 318	4 377	70 199	286 241	360 266	644 806	11 695
Indiana	4	21	17	1 477	46 726	1 115	2 256	32 491	176 047	113 365	292 130	8 323
Iowa	1	15	12	1 290	42 660	857	1 671	24 161	150 539	103 080	253 007	8 713
Kansas	-	20	12	2 808	75 085	1 932	3 451	51 531	160 252	168 511	328 490	9 791
Kentucky	7	11	8	573	16 527	446	914	11 351	51 719	42 377	93 168	2 335
Louisiana	3	12	4	211	5 371	168	327	3 775	13 747	7 712	21 440	303
Maine	-	3	3	102	2 786	70	132	1 918	6 141	5 258	11 412	422
Maryland	1	15	9	978	23 728	776	1 605	19 033	105 678	57 543	162 052	5 265
Massachusetts	-	19	9	912	33 241	681	1 370	22 481	135 239	66 891	203 023	2 350
Michigan	2	38	21	1 472	43 850	1 001	1 684	24 061	115 565	79 143	195 161	3 659
Minnesota	-	24	15	1 884	55 633	1 070	2 033	28 627	178 742	105 129	285 953	3 550
Missouri	1	26	12	1 285	43 723	926	1 919	30 038	217 157	121 815	339 520	7 726
Nebraska	-	4	3	280	10 001	175	306	5 277	40 296	18 179	58 805	697
Nevada	7	7	2	122	3 493	89	160	2 280	9 390	8 407	17 763	409
New Jersey	6	32	16	1 832	63 473	1 183	2 211	35 728	123 342	143 545	271 984	6 010
New York	1	60	23	2 369	67 178	1 498	2 825	39 901	232 472	115 026	348 086	15 370
North Carolina	2	29	13	1 403	35 564	921	1 844	24 320	134 642	61 475	195 691	6 625
Ohio	1	44	28	3 070	99 627	2 144	4 258	64 344	360 886	151 575	513 089	25 365
Oklahoma	-	14	5	606	16 423	439	801	11 386	50 371	25 474	76 001	1 191
Oregon	2	20	14	962	31 295	686	1 400	19 723	78 603	45 926	124 076	4 136
Pennsylvania	1	61	42	4 538	135 460	3 215	6 340	85 569	476 626	448 403	919 526	25 726
South Carolina	2	11	8	565	18 000	379	842	11 087	53 704	86 148	139 157	1 541
Tennessee	2	30	16	1 159	33 378	831	1 651	21 299	140 113	80 788	220 463	4 613
Texas	-	86	50	4 156	123 600	3 187	6 275	83 399	473 695	309 656	778 222	14 698
Utah	4	14	10	1 213	34 067	989	1 955	26 875	162 279	76 037	239 042	4 414
Vermont	-	5	3	447	16 458	361	740	12 577	84 241	52 320	136 252	4 364
Virginia	-	23	12	1 349	41 201	909	1 730	27 359	156 222	79 942	235 639	8 764
Washington	-	19	11	911	29 936	694	1 158	20 127	86 035	43 119	129 824	3 521
Wisconsin	7	24	15	1 231	41 937	966	1 900	29 642	127 764	112 412	239 513	4 502

* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

Table 3. Detailed Statistics by Industry: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
323116, MANIFOLD BUSINESS FORM PRINTING		323116, MANIFOLD BUSINESS FORM PRINTING— Con.	
Companies ¹	number.. 719	Value added	\$1,000.. 5 706 765
All establishments	number.. 1 039	Total inventories, beginning of year	\$1,000.. 738 911
Establishments with 1 to 19 employees	number.. 466	Finished goods inventories, beginning of year	\$1,000.. 355 096
Establishments with 20 to 99 employees	number.. 416	Work-in-process inventories, beginning of year	\$1,000.. 84 397
Establishments with 100 employees or more	number.. 157	Materials and supplies inventories, beginning of year	\$1,000.. 299 418
All employees	number.. 56 423	Total inventories, end of year	\$1,000.. 753 180
Total compensation ²	\$1,000.. 2 094 410	Finished goods inventories, end of year	\$1,000.. 359 416
Annual payroll	\$1,000.. 1 690 008	Work-in-process inventories, end of year	\$1,000.. 83 888
Total fringe benefits	\$1,000.. 404 402	Materials and supplies inventories, end of year	\$1,000.. 309 876
Production workers, average for year	number.. 39 431	Gross book value of total assets at beginning of year	\$1,000.. 3 066 221
Production workers on March 12	number.. 40 185	Total capital expenditures (new and used)	\$1,000.. 258 580
Production workers on May 12	number.. 39 521	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 35 586
Production workers on August 12	number.. 39 213	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 222 994
Production workers on November 12	number.. 38 805	Total retirements ²	\$1,000.. 118 359
Production-worker hours	1,000.. 76 131	Gross book value of total assets at end of year	\$1,000.. 3 206 442
Production-worker wages	\$1,000.. 1 088 048	Total depreciation during year ²	\$1,000.. 213 600
Total cost of materials	\$1,000.. 3 928 756	Total rental payments ²	\$1,000.. 103 664
Cost of materials, parts, containers, etc., consumed	\$1,000.. 3 412 629	Buildings and other structures rental payments ²	\$1,000.. 53 987
Cost of resales	\$1,000.. 383 271	Machinery and equipment rental payments ²	\$1,000.. 49 677
Cost of fuels	\$1,000.. 13 645	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 7 966
Cost of purchased electricity	\$1,000.. 59 668	Response coverage ratio ⁴	percent.. 62
Cost of contract work	\$1,000.. 59 543	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 43 600
Quantity of electricity purchased for heat and power	1,000 kWh.. 1 005 880	Response coverage ratio ⁴	percent.. 62
Quantity of electricity generated less sold for heat and power	1,000 kWh.. —	Cost of purchased communications services ³	\$1,000.. 20 959
Total value of shipments	\$1,000.. 9 631 710	Response coverage ratio ⁴	percent.. 62
Primary products value of shipments	\$1,000.. 8 014 437	Cost of purchased legal services ³	\$1,000.. 2 521
Secondary products value of shipments	\$1,000.. 1 055 305	Response coverage ratio ⁴	percent.. 62
Total miscellaneous receipts	\$1,000.. 561 968	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 14 964
Value of resales	\$1,000.. 525 921	Response coverage ratio ⁴	percent.. 62
Contract receipts	\$1,000.. —	Cost of purchased advertising services ³	\$1,000.. 26 628
Other miscellaneous receipts	\$1,000.. 36 047	Response coverage ratio ⁴	percent.. 62
Primary products specialization ratio	percent.. 88	Cost of purchased software and other data processing services ³	\$1,000.. 3 242
Value of primary products shipments made in all industries	\$1,000.. 8 305 505	Response coverage ratio ⁴	percent.. 62
Value of primary products shipments made in this industry	\$1,000.. 8 014 437	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 3 077
Value of primary products shipments made in other industries	\$1,000.. 291 068	Response coverage ratio ⁴	percent.. 62
Coverage ratio	percent.. 96		

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

³Based on ASM sample data.

⁴A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

Table 4. Industry Statistics by Employment Size: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E ¹	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
323116. MANIFOLD BUSINESS FORM PRINTING												
All establishments	2	1 039	573	56 423	1 690 008	39 431	76 131	1 088 048	5 706 765	3 928 756	9 631 710	258 580
Establishments with 1 to 4 employees	8	209	—	422	10 984	352	556	7 812	33 639	29 332	62 813	1 787
Establishments with 5 to 9 employees	7	111	—	751	21 482	582	945	14 763	62 698	53 281	115 816	3 454
Establishments with 10 to 19 employees	5	146	—	2 060	56 431	1 493	2 695	36 970	172 969	139 274	311 819	8 185
Establishments with 20 to 49 employees	2	238	238	7 858	241 789	5 812	11 245	157 066	626 630	525 952	1 156 581	28 227
Establishments with 50 to 99 employees	1	178	178	12 397	396 247	8 690	17 351	239 628	1 110 522	1 107 188	2 213 118	50 366
Establishments with 100 to 249 employees	2	124	124	18 620	591 589	13 398	26 947	399 666	2 356 208	1 456 155	3 805 610	103 429
Establishments with 250 to 499 employees	1	26	26	8 912	242 235	6 283	11 374	154 596	829 224	394 530	1 225 750	29 017
Establishments with 500 to 999 employees	1	5	5	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees	—	2	2	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records ²	9	301	—	1 831	44 089	1 424	2 091	30 907	137 092	122 735	259 043	7 737

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
323116	Manifold business form printing	1 039	56 423	1 690 008	39 431	76 131	1 088 048	5 706 765	3 928 756	9 631 710	258 580
3231161	Unit set forms, loose or bound	119	8 831	282 352	5 990	12 158	172 478	1 129 592	601 229	1 726 941	57 157
3231163	Manifold books and pegboard accounting systems	9	474	12 212	358	682	8 594	56 214	32 970	89 103	1 737
3231165	Custom continuous business forms ..	275	20 976	674 768	14 923	29 792	442 955	2 004 054	1 456 355	3 458 903	104 111
3231167	Stock continuous business forms ...	40	3 230	115 325	1 955	3 805	60 689	402 661	882 857	1 282 661	12 712
3231169	Checkbooks (including inserts and refills, but excluding those in continuous form and die-cut)	117	15 550	394 753	10 751	19 848	264 524	1 466 374	412 500	1 884 348	49 404

Table 6a. Products Statistics: 1997 and 1992

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
323116	Manifold business form printing	N	X	X	8 305 505	N	X	X	N
3231161	Unit set forms, loose or bound	N	X	X	1 618 023	N	X	X	1 363 479
32311611	Unit set forms, loose or bound, except custom printed	N	X	X	573 383	N	X	X	N
3231161111	Unit set label-form combination business forms, loose or bound	21	X	X	30 491	16	X	X	21 113
3231161121	Unit set business forms, loose or bound, stock (including imprinted), with one-time carbon	30	X	X	315 279	31	X	X	80 923
3231161126	Unit set business forms, loose or bound, stock (including imprinted), carbonless	55	X	X	227 613	42	X	X	97 950
32311612	Unit set business forms, loose or bound, custom-printed, with one-time carbon	N	X	X	273 353	N	X	X	N
3231161231	Unit set business forms, loose or bound, custom-printed, with one-time carbon	148	X	X	273 353	183	X	X	340 059
32311613	Unit set business forms, loose or bound, custom-printed, carbonless	N	X	X	514 076	N	X	X	N
3231161336	Unit set business forms, loose or bound, custom-printed, carbonless	267	X	X	514 076	253	X	X	607 405
32311614	Tabulating card sets	N	X	X	12 505	N	X	X	N
3231161441	Tabulating card sets	7	X	X	12 505	10	X	X	9 234
3231161Y	Unit set forms, loose or bound, nsk	N	X	X	244 706	N	X	X	N
3231161YVW	Unit set forms, loose or bound, nsk	N	X	X	244 706	N	X	X	206 795
3231163	Manifold books and pegboard accounting systems	N	X	X	160 104	N	X	X	330 534
32311631	Manifold books and pegboard accounting systems	N	X	X	121 368	N	X	X	N
3231163111	Pegboard accounting systems	18	X	X	68 748	18	X	X	103 067
3231163116	Sales and other manifold books	39	X	X	52 620	33	X	X	168 002
3231163Y	Manifold books and pegboard accounting systems, nsk	N	X	X	38 736	N	X	X	N
3231163YVW	Manifold books and pegboard accounting systems, nsk	N	X	X	38 736	N	X	X	59 465
3231165	Custom continuous business forms	N	X	X	2 549 541	N	X	X	2 647 581
32311651	Label-form combination, jumbo roll-feed, and self-mailer custom-printed continuous business forms	N	X	X	543 868	N	X	X	N
3231165111	Custom continuous label-form combination business forms	45	X	X	374 638	45	X	X	105 561
3231165116	Custom continuous jumbo roll-feed business forms	29	X	X	91 341	18	X	X	88 344
3231165121	Custom continuous peel-back self-mailer business forms	20	X	X	21 462	20	X	X	61 228
3231165126	Custom continuous insert self-mailer business forms	18	X	X	36 550	19	X	X	100 120
3231165131	All other custom continuous self-mailer business forms	8	X	X	19 877	11	X	X	30 960
32311652	One-part custom-printed continuous business forms	N	X	X	485 963	N	X	X	N
3231165236	Custom continuous business forms, one-part, with product affixed	24	X	X	121 997	34	X	X	82 799
3231165241	All other custom continuous business forms, nec, one-part with no product affixed	140	X	X	363 966	147	X	X	522 711
32311653	All other custom continuous multiple-part business forms, with one-time carbon	N	X	X	233 817	N	X	X	N
3231165346	All other custom continuous multiple-part business forms, with one-time carbon	124	X	X	233 817	170	X	X	387 467
32311654	All other custom continuous multiple-part business forms, carbonless	N	X	X	881 635	N	X	X	N
3231165451	All other custom continuous multiple-part business forms, carbonless	214	X	X	881 635	225	X	X	911 382
3231165Y	Custom continuous forms, nsk	N	X	X	404 258	N	X	X	N
3231165YVW	Custom continuous forms, nsk	N	X	X	404 258	N	X	X	357 009
3231167	Stock continuous business forms	N	X	X	1 065 457	N	X	X	1 590 806
32311671	Stock continuous business forms	N	X	X	929 196	N	X	X	N
3231167111	Stock continuous label-form combination business forms	7	X	X	102 380	6	X	X	42 231
3231167116	Stock continuous jumbo roll-feed business forms	5	X	X	42 758	6	X	X	19 622
3231167121	All other stock continuous business forms, nec, one-part	25	X	X	620 347	38	X	X	811 429
3231167126	All other stock continuous business forms, nec, multiple-part with one-time carbon	17	X	X	61 996	26	X	X	89 141
3231167131	All other stock continuous business forms, nec, multiple-part, carbonless	26	X	X	101 715	30	X	X	260 170
3231167Y	Stock continuous forms, nsk	N	X	X	136 261	N	X	X	N
3231167YVW	Stock continuous forms, nsk	N	X	X	136 261	N	X	X	368 213

See footnotes at end of table.

Table 6a. Products Statistics: 1997 and 1992—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
323116	Manifold business form printing—Con.								
3231169	Checkbooks (including inserts and refills, but excluding those in continuous form and die-cut)	N	X	X	1 628 776	N	X	X	1 677 577
32311691	Checkbooks (including inserts and refills, but excluding those in continuous form and die-cut)	N	X	X	1 628 776	N	X	X	N
3231169100	Checkbooks (including inserts and refills, but excluding those in continuous form and die-cut)	42	X	X	1 628 776	N	X	X	N
323116W	Manifold business form printing, nsk, total	N	X	X	1 283 604	N	X	X	N
323116WY	Manifold business form printing, nsk, total	N	X	X	1 283 604	N	X	X	N
323116WYWW	Manifold business form printing, nsk, for nonadministrative-record establishments	N	X	X	1 046 513	N	X	X	N
323116WYWY	Manifold business form printing, nsk, for administrative-record establishments	N	X	X	237 091	N	X	X	N

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6b. Product Class Shipments for Selected States: 1997 and 1992

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3231161	UNIT SET FORMS, LOOSE OR BOUND		
	United States	1 618 023	1 363 479
	Alabama	11 286	N
	Arizona	14 461	10 089
	California	131 995	111 556
	Colorado	13 701	9 472
	Connecticut	18 319	15 650
	Florida	23 541	25 155
	Georgia	85 383	38 534
	Illinois	144 651	120 224
	Indiana	59 462	49 426
	Iowa	97 831	9 545
	Kansas	107 081	45 996
	Maryland	4 220	11 833
	Massachusetts	15 269	17 153
	Michigan	30 645	23 196
	Minnesota	20 570	20 427
	Mississippi	3 403	N
	Missouri	83 470	59 925
	Nevada	2 583	N
	New Jersey	21 883	23 233
	New York	49 455	51 773
	North Carolina	32 400	41 766
	Ohio	108 682	64 859
	Oregon	20 575	33 991
	Pennsylvania	145 596	168 855
	Tennessee	105 854	118 738
	Texas	126 820	93 038
	Virginia	28 159	22 835
	Washington	13 219	12 762
	Wisconsin	17 313	16 179
3231163	MANIFOLD BOOKS AND PEGBOARD ACCOUNTING SYSTEMS		
	United States	160 104	330 534
	California	33 384	44 709
	Georgia	3 429	24 784
	Illinois	19 233	N
	New Jersey	4 109	4 227
	Ohio	10 621	31 510
	Pennsylvania	2 924	3 557
	Texas	6 522	12 603

See footnotes at end of table.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3231165	CUSTOM CONTINUOUS BUSINESS FORMS		
	United States	2 549 541	2 647 581
	Arizona	47 379	18 049
	Arkansas	79 076	84 379
	California	215 266	212 188
	Colorado	21 657	22 244
	Connecticut	42 259	38 874
	Florida	50 468	47 599
	Georgia	34 100	80 219
	Illinois	149 932	198 641
	Indiana	62 034	74 327
	Iowa	89 059	119 409
	Kansas	93 688	90 176
	Kentucky	27 983	36 210
	Maryland	75 310	56 965
	Massachusetts	22 775	14 642
	Michigan	63 413	57 831
	Minnesota	50 868	49 056
	Missouri	53 145	45 236
	New Hampshire	40 915	N
	New Jersey	20 154	44 750
	New York	62 888	89 893
	North Carolina	15 004	39 838
	Ohio	219 218	166 795
	Oregon	40 090	58 475
	Pennsylvania	178 015	193 565
	South Carolina	69 383	45 228
	Tennessee	33 456	50 055
	Texas	176 173	173 248
	Vermont	110 831	111 333
	Virginia	69 716	54 161
	Washington	27 907	11 668
	Wisconsin	48 462	95 785
3231167	STOCK CONTINUOUS BUSINESS FORMS		
	United States	1 065 457	1 590 806
	California	145 665	130 603
	Illinois	103 558	126 445
	Iowa	12 680	78 037
	Kansas	3 247	N
	Minnesota	13 697	N
	Missouri	54 085	69 801
	New York	2 868	7 619
	Ohio	7 761	21 701
	Pennsylvania	246 204	307 299
	Texas	77 041	137 431
3231169	CHECKBOOKS (INCLUDING INSERTS AND REFILLS, BUT EXCLUDING THOSE IN CONTINUOUS FORM AND DIE-CUT)		
	United States	1 628 776	1 677 577
	Alabama	37 650	N
	California	144 783	196 921
	Connecticut	24 288	28 285
	Florida	45 899	91 366
	Georgia	77 159	48 993
	Illinois	77 189	N
	Missouri	19 410	N
	New York	75 714	48 707
	North Carolina	80 531	45 786
	Ohio	27 399	N
	Pennsylvania	102 583	79 889
	Tennessee	41 418	44 688
	Texas	194 776	137 873
	Utah	30 640	N
	Wisconsin	19 297	32 973

Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Table 7. Materials Consumed by Kind: 1997 and 1992

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
323116	MANIFOLD BUSINESS FORM PRINTING				
32200015	Coated paper	X	273 953	X	N
32212019	Uncoated paper	X	979 815	X	1 376 095
32212021	Carbonless paper	X	531 837	X	N
32212023	Carbonizing tissue stock for conversion into one-time carbon paper	X	8 801	X	16 538
33994400	One-time carbon paper	X	26 396	X	55 119
32222200	Pressure-sensitive base stock, self-adhesive, including paper, film, foil, etc.	X	31 162	X	73 186
32591003	Printing ink	X	27 943	X	N
32221001	Paperboard containers, boxes, and corrugated paperboard	X	72 851	X	N
00970099	All other materials and components, parts, containers, and supplies	X	197 488	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	1 262 383	X	N

Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory Data by Stage of Fabrication

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific Materials Consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

COST OF PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

Response Coverage Ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

Production Workers

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

FRINGE BENEFITS

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

NUMBER OF ESTABLISHMENTS AND COMPANIES

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry	334612	Reproduction of software
Product class	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code	3346120X	
Product code	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in Cost of Materials and Value of Shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and Coverage Ratios

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

323116 MANIFOLD BUSINESS FORM PRINTING

This U.S. industry comprises establishments primarily engaged in printing special forms, including checkbooks, for use in the operation of a business. The forms may be in single and multiple sets, including carbonized, interleaved with carbon, or otherwise processed for multiple reproduction.

The data published with NAICS code 323116 include the following SIC industries:

- 2761 Manifold business forms
- 2782 Blankbooks and looseleaf binders (pt)

Appendix C.

Coverage and Methodology

MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

Nonmail component. The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

QUALIFICATIONS OF THE ASM DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

Not applicable for this report.

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
323116W pt	27820 pt	27820 pt	3231191	27591	27591	323119W pt	39999 pt	39999 pt
323116WYWW pt	2761000	2761000	3231191100 pt	2759100	2759100	323119WYWW pt	2759000 pt	2759000 pt
323116WYWW pt	2782000 pt	2782000 pt	3231191100 pt	2759113 pt	2759112	323119WYWW pt	2771000 pt	2771000 pt
323116WYWW pt	2761002	2761002	3231191100 pt	2759113 pt	2759114	323119WYWW pt	2771211	2771200 pt
323116WYWW pt	2782002 pt	2782002 pt	3231193	27592	27592	323119WYWW pt	2771200 pt	2771200 pt
3231171	27323	27323	3231193111	2759212	2759212	323119WYWW pt	3999000 pt	3999000 pt
3231171111	2732310	2732310	3231193116	2759214	2759214	323119WYWW pt	3999900 pt	3999900 pt
3231171216	2732312	2732312	3231193121	2759216	2759216	323119WYWW pt	3999986	3999999 pt
3231171321	2732314	2732314	3231193126	2759218	2759218	323119WYWW pt	2759002 pt	2759002 pt
3231171426	2732316	2732316	3231193131	2759221	2759221	323119WYWW pt	2771002 pt	2771002 pt
3231171531	2732318	2732318	3231193136	2759223	2759223	323119WYWW pt	3999002 pt	3999002 pt
3231171YVV	2732300	2732300	3231193141	2759227	2759227	3231211	27891	27891
3231173	27324	27324	3231193YVV	2759200	2759200	3231211111	2789110	2789110
3231173111	2732422	2732422	3231195	27593	27593	3231211116	2789113	2789113
3231173116	2732425	2732425	3231195100 pt	2759300	2759300	3231211121	2789125	2789125
3231173YVV	2732400	2732400	3231195100 pt	2759317 pt	2759312	3231211226	2789141	2789141
3231175	27325	27325	3231195100 pt	2759317 pt	2759318	3231211YVV	2789100	2789100
3231175111	2732532	2732532	3231197	27594	27594	3231213	27892	27892
3231175116	2732535	2732535	3231197100 pt	2759400	2759400	3231213111	2789223	2789223
3231175YVV	2732500	2732500	3231197100 pt	2759421 pt	2759411	3231213216	2789224	2789224
3231177	27326	27326	3231197100 pt	2759421 pt	2759413	3231213326	2789225	2789225
3231177111	2732642	2732642	3231197100 pt	2759421 pt	2759415	3231213431	2789226	2789226
3231177216	2732643	2732643	3231197100 pt	2759421 pt	2759419	3231213536	2789281	2789281
3231177321	2732644	2732644	3231197100 pt	2759421 pt	2759419	3231213YVV	2789292	2789292
3231177426	2732645	2732645	3231199	27595	27595	323121W	27890	27890
3231177531	2732646	2732646	3231199111	2759512	2759512	323121WYWW	2789000	2789000
3231177636	2732647	2732647	3231199116	2759514	2759514	323121WYVV	2789002	2789002
3231177741	2732648	2732648	3231199121	2759516	2759516	3231221 pt	27910 pt	27910 pt
3231177YVV	2732600	2732600	3231199126	2759518	2759518	3231221 pt	27962	27962
3231179	2732A	2732A	3231199131	2759520	2759520	3231221 pt	27963 pt	27963 pt
3231179111	2732A52	2732A52	3231199136	2759522	2759522	3231221100 pt	2791000 pt	2791000 pt
3231179116	2732A54	2732A54	3231199141	2759524	2759524	3231221100 pt	2791000 pt	2791016
3231179121	2732A55	2732A55	3231199YVV	2759500	2759500	3231221100 pt	2791000 pt	2791018
3231179126	2732A56	2732A56	323119B pt	27596	27596	3231221100 pt	2791000 pt	2791032
3231179131	2732A57	2732A57	323119B pt	27712 pt	27712 pt	3231221100 pt	2791000 pt	2791034
3231179YVV	2732A00	2732A00	323119B111	2759611	2759611	3231221100 pt	2796200 pt	2796200
323117A	2732B	2732B	323119B116	2759613	2759613	3231221100 pt	2796200 pt	2796231
323117A100	2732B00	2732B00	323119B121	2759615	2759615	3231221100 pt	2796200 pt	2796239
323117C	2732C	2732C	323119B126	2759616	2759616	3231221100 pt	2796200 pt	2796241
323117C100	2732C00	2732C00	323119B131	2759617	2759617	3231221100 pt	2796300 pt	2796300 pt
323117W	27320	27320	323119B136	2759619	2759619	3231221100 pt	2796352	2796352
323117WYWW	2732000	2732000	323119B141	2759621	2759621	3231221100 pt	2796375	2796375
323117WYVV	2732002	2732002	323119B146	2759623	2759623	3231223 pt	27961	27961
3231181	27824	27824	323119B191 pt	2759627	2759627	3231223 pt	27963 pt	27963 pt
3231181111	2782441	2782441	323119B191 pt	2771209	2771200 pt	323122306 pt	2796100 pt	2796100 pt
3231181116	2782445	2782445	323119BYVV pt	2759600	2759600	323122306 pt	2796100 pt	2796111
3231181121	2782451	2782451	323119BYVV pt	2771200 pt	2771200 pt	323122306 pt	2796100 pt	2796115
3231181YVV	2782400	2782400	323119E	27599	27599	323122306 pt	2796100 pt	2796131
3231183	27825	27825	323119E111	2759912	2759912	3231223111 pt	2796327 pt	2796325
3231183111	2782501	2782501	323119E116	2759922	2759922	3231223116	2796327 pt	2796330
3231183116	2782503	2782503	323119E121	2759933	2759933	3231223121	2796345	2796345
3231183121	2782506	2782506	323119E126	2759935	2759935	3231223126	2796347	2796347
3231183126	2782508	2782508	323119EYVV	2759900	2759900	3231223191 pt	2796353	2796353
3231183131	2782511	2782511	323119W pt	27590 pt	27590 pt	3231223191 pt	2796371 pt	2796370
3231183136	2782522	2782522	323119W pt	27710 pt	27710 pt	3231223YVV pt	2796371 pt	2796370
3231183YVV	2782500	2782500	323119W pt	27710 pt	27710 pt	3231223YVV pt	2796100 pt	2796100 pt
323118W	27820 pt	27820 pt	323119W pt	27712 pt	27712 pt	323122W pt	2796300 pt	2796300 pt
323118WYWW	2782000 pt	2782000 pt	323119W pt	27712 pt	27712 pt	323122WYVV	27960	27960
323118WYVV	2782002 pt	2782002 pt	323119W pt	39990 pt	39990 pt	323122WYVV	2791000 pt	2791000 pt
323118WYVV	2782002 pt	2782002 pt				323122WYVV	2796000	2796000
						323122WYVV	2791002	2791002
						323122WYVV	2796002	2796002

