

Benchmark Report for Manufacturers' Shipments, Inventories, and Orders: January 2004 Through December 2007

Issued May 2008

M3-3(07)

Current Industrial Reports

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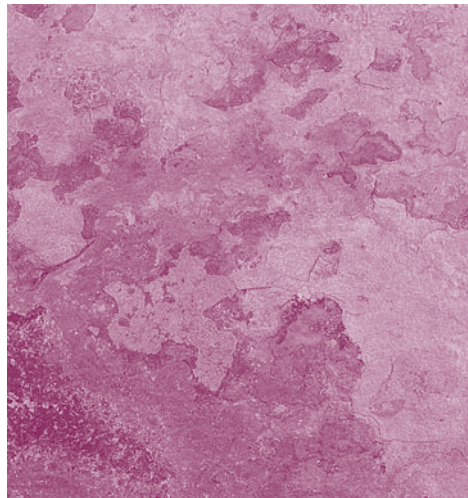
Finally, a special acknowledgment is due to the many businesses whose cooperation was essential to the success of this report.

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Summary of Revisions

SUMMARY

The revisions to the historical data from the Manufacturers' Shipments, Inventories, and Orders survey, as shown in this publication, are the result of:

- Benchmarking the shipments and inventory data to the 2006 Annual Survey of Manufactures (ASM).
- Adjusting new and unfilled orders to be consistent with the benchmarked shipments and inventory data.
- Correcting monthly data for late receipts, reclassification of reported data, and revisions to previously reported data.
- Updating the trading day and seasonal adjustment factors for all series.

Table A summarizes the results of the first two procedures for 2004 through 2007 in the form of annual level and year-to-year percent change revisions. Table B shows the revisions attributable to late or revised data and trading day and seasonal adjustment factor updates as they affected the more recent month-to-month trends in the seasonally adjusted data.

DATA AVAILABILITY

The monthly press releases for the M3 survey are issued approximately the 18th working day of the month following the statistical period for the advance report on durable goods and the 23rd working day for the full report. These monthly reports, the revised monthly data, as well as this Benchmark report, are available the day of issue through STAT-USA/Internet at www.stat-usa.gov or through the Manufacturers' Shipments, Inventories, and Orders Web site at www.census.gov/indicator/www/m3.

In addition to this report, historical SIC data from 1958 through March 2001 and revised monthly data from 1992 through March 2008 on a NAICS basis are available on the Internet at www.census.gov/indicator/www/m3.

Description of Survey

The Manufacturers' Shipments, Inventories, and Orders (M3) survey provides broad-based, monthly statistical data on economic conditions in the domestic manufacturing sector. The survey measures current industrial activity and provides an indication of future business trends. Data are used by: the Executive Branch of the government for developing economic, fiscal, and monetary policy; the Bureau of Economic Analysis as components of the gross domestic product estimates; and trade associations, corporate economists, and other members of the business community as an analytical tool for assessing the current and future economic condition of the country.

COMPOSITION OF INDUSTRY CATEGORIES

There are 89 separately tabulated industry categories in the M3 survey. These categories are groupings of the 473 manufacturing industries as defined in the *2002 North American Industry Classification System (NAICS) Manual*. Chapter B lists these categories.

Because companies provide data on a voluntary basis, reporting in many of these 89 categories is not sufficient to warrant separate publication of the data. Consolidated reporting by some large companies also limits the quality of the data in some categories. A company that reports on a consolidated basis (entire company or a division) is included in the M3 category in which the reporting unit as a whole is classified and has no influence on the movement of the other industries which may be included in its combined report.

As a result, it has been necessary to combine the 89 industry categories into 59 publication levels for shipments and total inventories. For new and unfilled orders and inventories by stage of fabrication, it has been necessary to introduce further combinations because of the lower response rates for those items.

COMPOSITION OF THE SURVEY PANEL

The monthly M3 estimates are based on information obtained from most manufacturing companies with \$500 million or more in annual shipments. In order to strengthen the sample coverage in individual industry categories, the survey includes selected smaller companies. The sources from which companies are identified for inclusion in the survey panel are the quinquennial economic censuses (manufacturing sector) and the Annual Survey of Manufactures (ASM).

For firms that operate in a single M3 industry category, the reporting unit typically comprises all operations of the company. Most large, diversified companies, however, file separate reports for divisions with significant activity in different industrial areas.

The composition of each company or reporting unit of a company in the survey usually includes more than one plant or establishment and frequently includes industry activities outside the M3 category in which it is classified. The survey methodology described later in this chapter assumes that the month-to-month changes of the total operations of the reporting units classified in each industry category effectively represent the month-to-month movements of all establishments that make up the category.

In 1962, the initially selected sample for this survey included all companies with more than 1,000 employees and smaller companies selected with probabilities proportional to their employment size within each industry category. As there was some deterioration in response rates for companies with between 100 and 1,000 employees, in January 1975, the staff selected a supplemental sample of approximately 1,000 companies from the universe of companies in this size range in order to strengthen the estimates. Although the response rate was only about 60 percent for this

group, beginning in January 1978 these data were added to the panel and included in the calculations of the monthly estimates. Because of poor response rates, the survey no longer included companies with less than 100 employees; instead, data for these companies were estimated by using overall industry month-to-month movements based on data reported by the larger companies.

In recent years, the size of the value of shipments of the company or reporting unit rather than the employment size has influenced the selection of companies to increase response rates. Using this criterion, census staff visit or otherwise contact large companies that did not report in the survey to request their participation or reconsideration of a previous decision not to participate. Also, staff request large diversified reporting companies to provide additional industry categories not previously provided.

Another method used for improving response has been contacting nonreporting companies by letter. Staff send letters on an ongoing basis to companies in industry categories with low response rates. In 1990, staff selected a probability sample and mailed requests to about 400 midsize companies in the plastics industry. The purpose was to test the viability of probability sampling, especially in industries comprised primarily of smaller, less diversified companies.

As a result of these efforts, we increased response by adding about 45 to 55 percent of the companies contacted to the panel. However, respondent dropouts frequently offset these increases. The current coverage levels in the survey show that reported data represent approximately 62 percent of the shipments estimates at the total manufacturing level.

In January 2007, approximately 380 nonreporting companies were added to the survey. These companies were selected because of low response rates in their respective industries. The response rate was about 60 percent for the "M3 Augmentation Project," but again, due to respondent dropouts, the overall reported data represent approximately 61 percent of the shipments estimates at the total manufacturing level.

LIMITATIONS OF THE DATA

The monthly data presented in this publication are subject to both sampling and nonsampling errors. Sampling errors occur because reports are received from a sample rather than from the complete universe of manufacturing companies. Because the present composition of the panel is not based on a probability sample, the amount of sampling error cannot be quantified. Nonsampling errors, on the other hand, are attributable to many sources. The use of company or divisional reports to estimate the monthly change for establishments is one source of nonsampling error. The use primarily of large companies to represent the month-to-month movement of all companies is another potential source. In addition, response and processing errors may be present, although computer edits and analytical review of the data detect the most significant errors of this kind prior to tabulation.

MONTHLY ESTIMATION PROCEDURE

A link relative procedure derives the monthly universe estimates of shipments, unfilled orders, and total inventories for each industry category. The universe estimate for the previous month is multiplied by the monthly ratio of change tabulated for reporting companies in the current month to arrive at a universe estimate for current month.

When an individual company reports unusually large changes from the previous month, or when a particular company has unique data patterns differing substantially from the movement shown by the rest of the reporting panel in a particular industry category, the company is excluded from the ratio of change calculation but included in the universe estimate of level. The effect of this procedure is to restrict the estimation for nonrespondents and firms not in the survey panel to the general trend of the industry.

The universe estimate of new orders is derived from the monthly estimate of shipments plus the change in unfilled orders between the current and prior period. The estimate includes orders that are received and filled in the same month as well as orders that have not yet been filled. It also includes the effects of cancellations and modifications of previously reported orders.

The standard ratio estimate procedure is not followed for new orders because not all companies report new orders, and some that do report this item limit their reporting to specific products for which long lead times are required in the production cycle. These companies, in effect, exclude new orders received for products that are shipped from inventory.

A modified procedure also is used to estimate the stage of fabrication inventory data. In this procedure, the total inventory data estimated for each tabulated industry category are retabulated to the appropriate three-digit NAICS subsector levels and serve as control totals for the stage of fabrication data. Initial estimates are made for each of the stages of fabrication at the three-digit NAICS level using the ratio estimation procedure. The differences between the sum of the stage of fabrication detail and total inventories at the three-digit NAICS level are then allocated proportionally to the stage of fabrication figures to form the estimates. The reasoning behind this procedure is that a significant number of companies report total inventories but cannot report inventories by stage of fabrication.

Trading Day Adjustment

Variations in the rate of manufacturing activity resulting from different numbers of trading days in the same month for different years and variations in the length of months can be an important cause of month-to-month fluctuations in the shipments data. For many industries, these irregularities can be identified approximately and removed so that the underlying trend cycle stands out clearly.

All of the shipments series that are seasonally adjusted have trading factors calculated in the trading day regression analysis routine of the X-12 seasonal adjustment software.¹ The two shipments series that are not being seasonally adjusted are only being adjusted for leap year and length of month variations. Chapter E includes a more detailed discussion of the methodology.

Seasonal Adjustment Methodology

The monthly data are adjusted for seasonality at the most detailed level tabulated in the survey, using the X-12 ARIMA version of the Census Bureau's seasonal adjustment program.² The seasonally adjusted estimates for shipments, unfilled orders, and total inventories for M3 industry categories are calculated by dividing the unadjusted estimates by seasonal adjustment factors computed by the X-12 ARIMA seasonal adjustment program. Seasonally adjusted new orders are computed by adding the changes between current and prior period seasonally adjusted unfilled orders to the current month's seasonally adjusted shipments.

The inventory by stage of fabrication data are seasonally adjusted at the three-digit NAICS subsector level for each stage. If the sum of the adjusted stage of fabrication does not equal the major group totals resulting from summing the seasonally adjusted total inventories for the individual industries, the difference is proportionally allocated to the stage of fabrication detail.

Staff calculate seasonal factors concurrently and include the current period observation in the calculation of the seasonal factor for that month. The factors reflected in this report are based on using data from January 1992 through December 2007 for shipments, unfilled orders, and inventories. Chapter F shows reliability measures regarding the adequacy of the seasonal adjustment of specific series. For information on specific measures used in the seasonal adjustment analysis, selection of options within the X-12 program for the individual industry series, and tests for the presence of seasonality, contact the Manufacturing and Construction Division, U.S. Census Bureau, Washington, DC 20233, or call 301-763-4832.

BENCHMARK PROCEDURE

The M3 survey data are benchmarked to reduce both sampling and nonsampling errors. The relatively small monthly sample size as well as the differences that result from collecting the monthly data on a divisional basis as compared to the benchmark data on an establishment basis account for most of the revision. Also, some monthly reports received too late to be included in the monthly publications are added to improve the revised estimates of change of the historical monthly data.

¹The X-12 ARIMA Seasonal Adjustment is the program used to calculate trading day weights and to seasonally adjust data in this publication.

²Ibid.

DEFINITION OF TERMS

Value of Shipments

The value of shipments data in the M3 survey represents net selling values, f.o.b. plant to the customer, after discounts and allowances and excluding freight charges and excise taxes. The ASM uses the same definition. However, the data reported in the two surveys frequently are not equal because of differences, discussed earlier, in the reporting unit. For multiestablishment companies, the M3 reports typically are company- or divisional-level reports that encompass groups of plants or products. The data reported are usually net sales and receipts from customers and do not include the value of interplant transfers. The reported sales are used to calculate month-to-month changes which bring forward the universe estimates developed from the ASM.

The value of products made elsewhere under contract from materials owned by the plant is also included in shipments as well as receipts for contract work performed for others, resales, miscellaneous activities such as the sale of scrap and refuse, and installation and repair work performed by employees of the plant.

In the shipbuilding industry, the value of work done in a given year may vary considerably from the value of shipments because of the long lead time between the start and completion of a large vessel. In both the annual survey and the M3, the value of work done during the year, rather than the value of shipments, is requested. The same procedure is followed for aircraft that are accounted for on a progress basis. Aircraft and ships for which shipments are recorded upon delivery are reported in the usual manner. Where value of work done is reported in place of shipments, the work-in-process inventories are normally charged to the customer as costs are incurred and are not accumulated as finished goods inventories by the shipyard or the aircraft producer.

The value of shipments figures developed from the ASM contain duplication at the M3 industry category and higher level aggregates, since the products of some six-digit NAICS industries are used as materials by other industries within the same M3 industry aggregate. The significance of the duplication within the specific M3 industry categories varies depending on their six-digit industry composition. It is most pronounced in a few highly integrated industry areas, such as primary metals and motor vehicles and parts.

Inventories

Inventories in the M3 survey are collected on a current cost or pre-LIFO (last in, first out) basis. Because different inventory valuation methods are reflected in the reported data, the estimates differ slightly from replacement cost estimates. Companies using the LIFO method for valuing inventories report their pre-LIFO value; that is, the adjustment to their base-period prices is excluded. In the ASM, inventories are collected according to this same definition.

Inventory data are requested from respondents by stage of fabrication; that is, finished goods, work in process, and raw materials and supplies. There are limitations to the quality of these data for two reasons. First, response to the stage of fabrication inquiries is lower than for total inventories because some companies do not keep their data monthly at this level of detail; those companies which do maintain monthly detailed records frequently do not have data for all three stages of fabrication or have quantity (physical volume) data only. Second, a product considered to be a finished good in one industry, such as steel mills shapes, may be reported as a raw material in another industry, such as stamping plants. Therefore, within the three-digit NAICS subsectors, the same type of inventory may be included under different stage of fabrication categories. Like total inventories, stage of fabrication inventories are also benchmarked to the ASM pre-LIFO data, but the stage of fabrication data are benchmarked at the three-digit subsector level.

New Orders Received and Unfilled Orders

New orders, as reported in the monthly survey, are net of order cancellations and include orders received and filled during the month as well as orders received for future delivery. They also include the value of contract changes which increase or decrease the value of the unfilled orders to which they relate. Orders are defined to include those supported by binding legal documents such as signed contracts, letters of award, or letters of intent, although in some industries this

definition may not be strictly applicable. In the case of letters of intent, the full amount of the sales value is included if the parties are in substantial agreement on the amount; otherwise, only the funds specifically authorized to be expended are included.

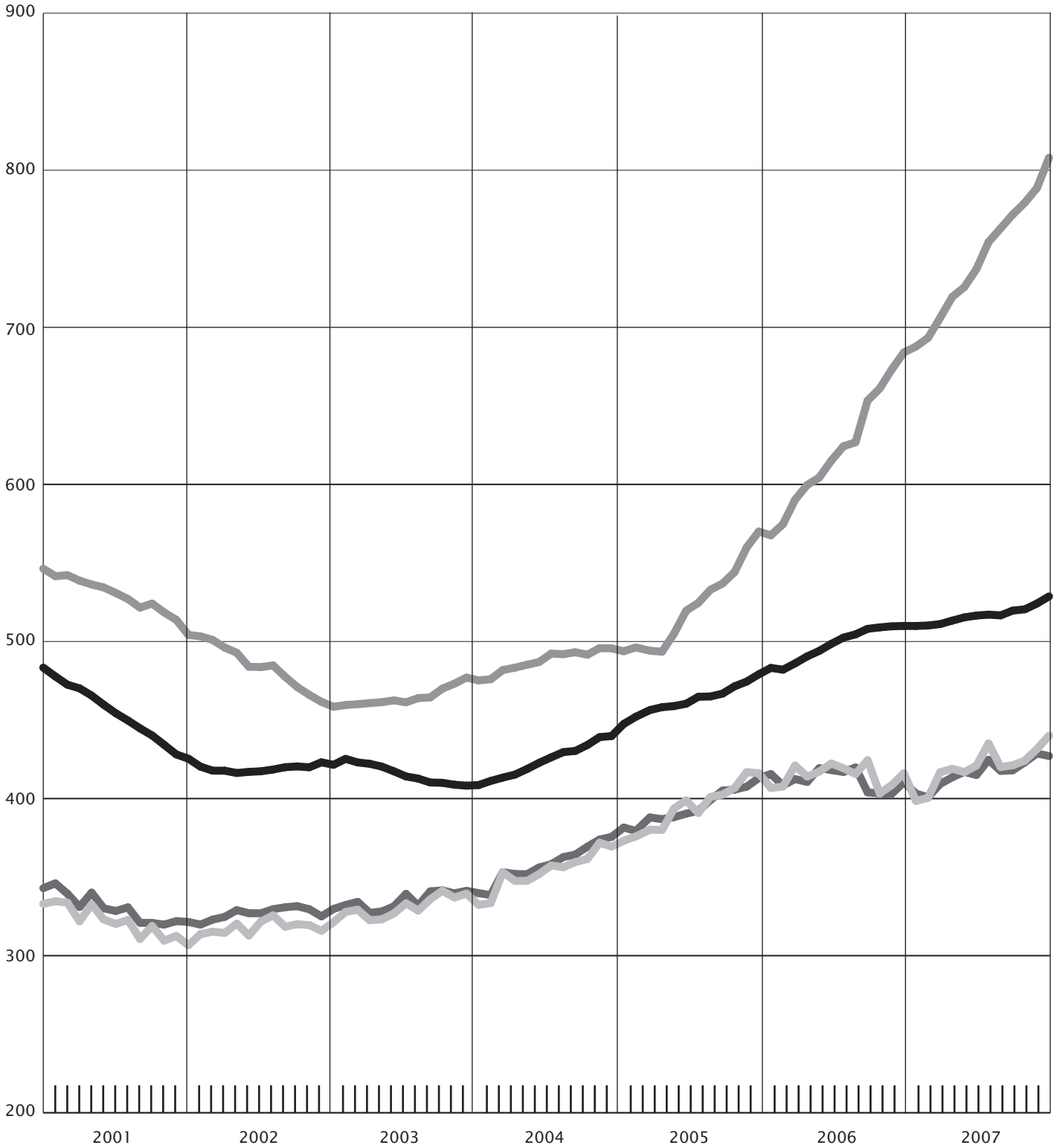
Unfilled orders include orders (as defined above) that have not been reflected as shipments. Generally, unfilled orders at the end of the reporting period are equal to unfilled orders at the beginning of the period plus net new orders received less net shipments.

Figure A.

All Manufacturing Industries Shipments, Inventories, and New and Unfilled Orders, Seasonally Adjusted: January 2001–December 2007

Billions of dollars

- Inventories
- Shipments
- Unfilled orders
- New orders



Source: U.S. Census Bureau, Manufacturers' Shipments, Inventories, and Orders: 2001-2007.

Figure B.
**Ratios of Unfilled Orders to Shipments and
 Inventories to Shipments, Seasonally Adjusted:
 January 2001–December 2007**

Unfilled orders to shipments ratio
 (left scale)
 Inventories to shipments ratio
 (right scale)



Source: U.S. Census Bureau, Manufacturer's Shipments, Inventories, and Orders: 2001-2007.

Figure C.
**Manufacturers' Shipments, Seasonally Adjusted:
 January 2001–December 2007**

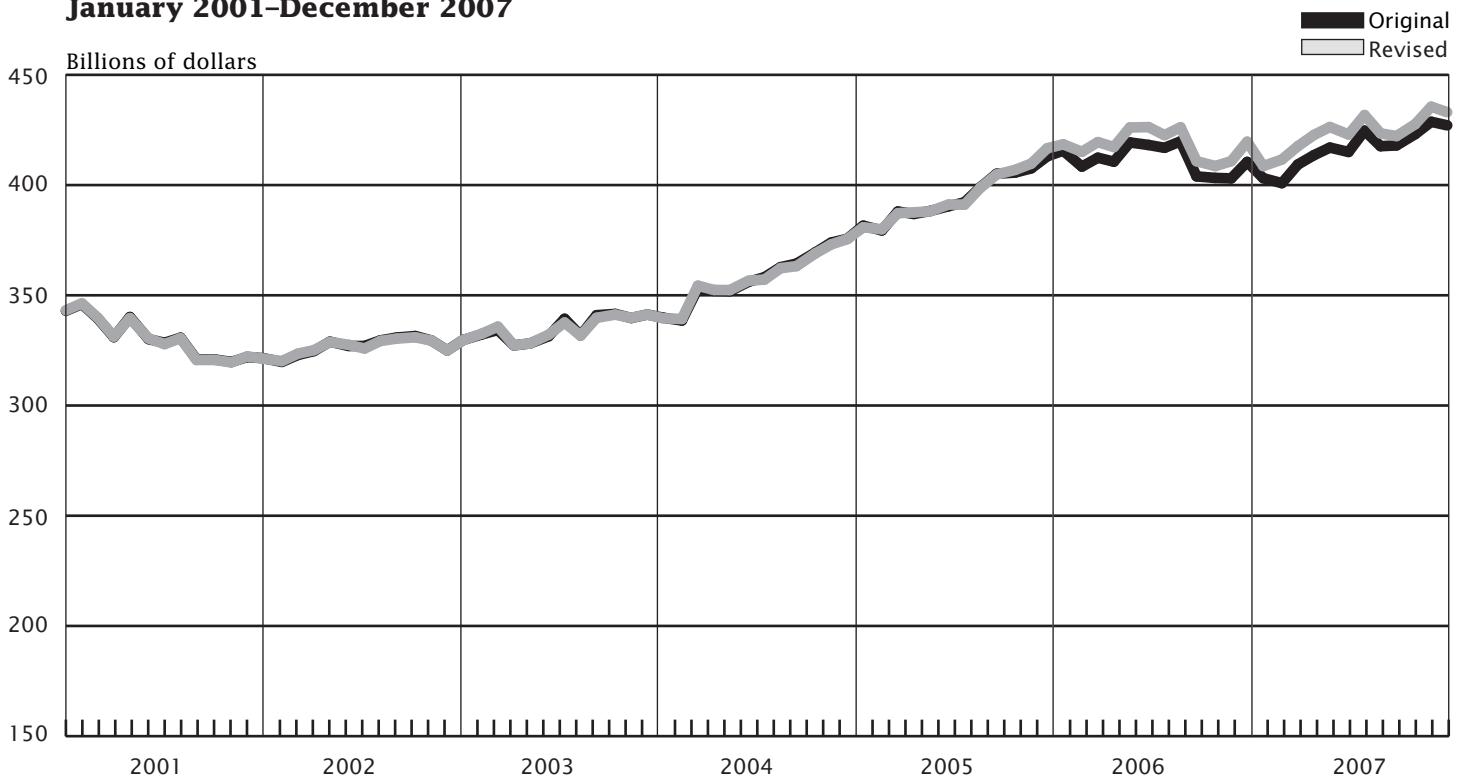
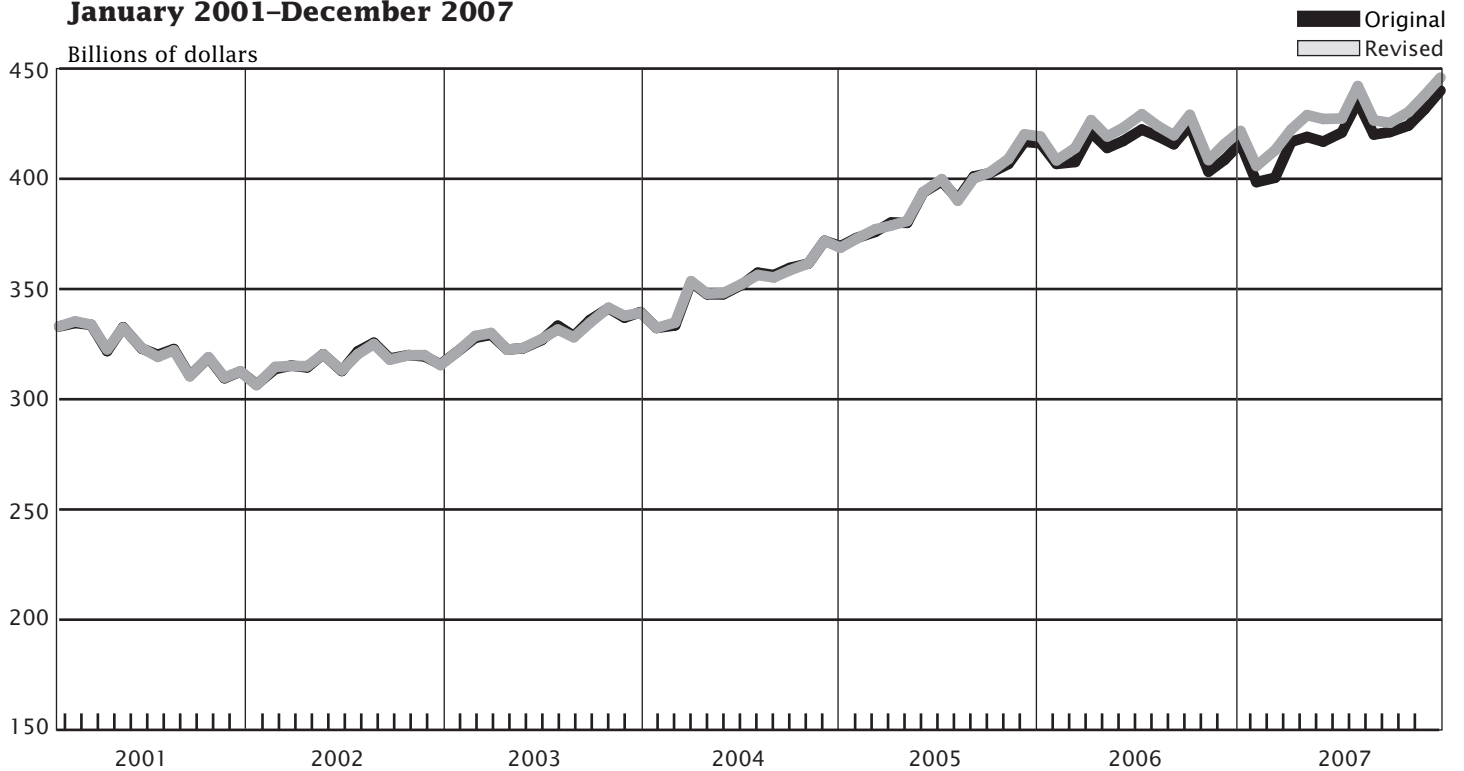


Figure D.
**Manufacturers' New Orders, Seasonally Adjusted:
 January 2001–December 2007**



Source: U.S. Census Bureau, Manufacturers' Shipments, Inventories, and Orders: 2001-2007.

Figure E.
**Manufacturers' Unfilled Orders, Seasonally Adjusted:
 January 2001–December 2007**

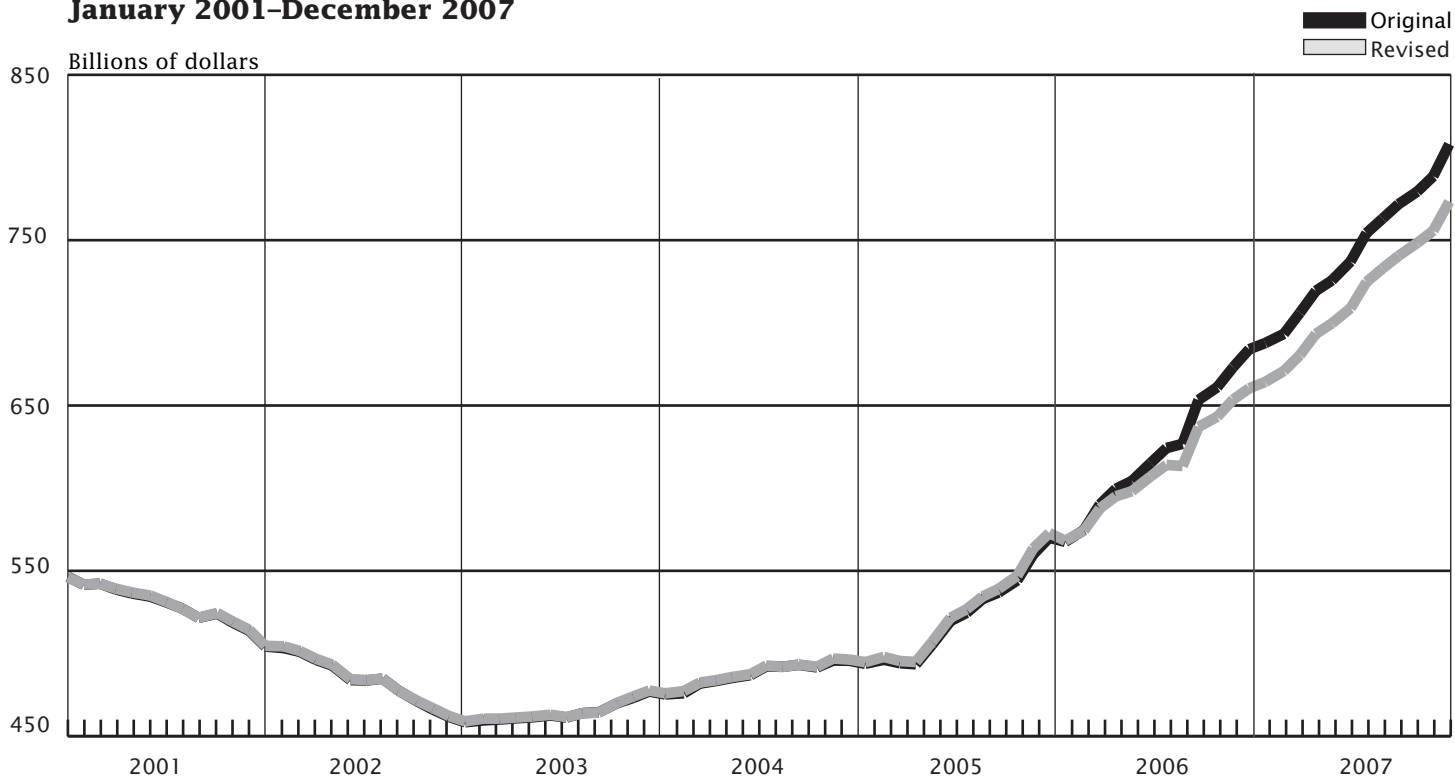
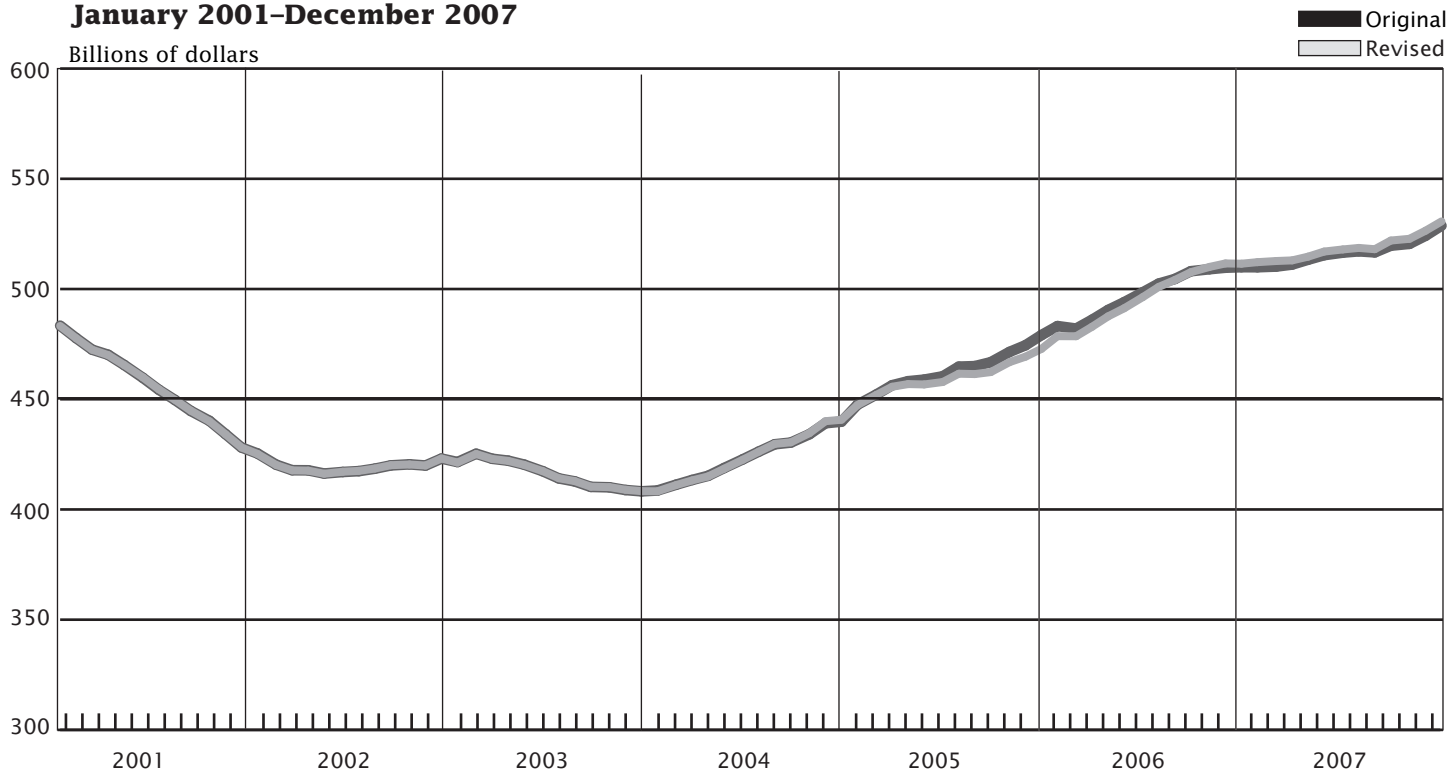


Figure F.
**Manufacturers' Inventories, Seasonally Adjusted:
 January 2001–December 2007**



Source: U.S. Census Bureau, Manufacturers' Shipments, Inventories, and Orders: 2001-2007.

Table A. **Revisions to Manufacturers' Shipments, Inventories, and Orders: 2004–2007**

[Billion dollars]

Industry		As revised	As published	Percent revision	Year-to-year percent change	
					As revised	As published
ANNUAL SHIPMENTS						
All manufacturing industries	2007 ...	5,081.1	4,994.8	1.7	1.2	1.1
	2006 ...	5,020.0	4,940.0	1.6	5.9	4.3
	2005 ...	4,742.1	4,735.4	0.1	10.1	9.9
	2004 ...	4,309.0	4,309.0	0.0	7.3	7.3
Durable goods industries	2007 ...	2,562.9	2,546.7	0.6	0.1	0.3
	2006 ...	2,560.9	2,537.9	0.9	5.6	4.9
	2005 ...	2,424.8	2,420.3	0.2	7.1	6.9
	2004 ...	2,264.7	2,264.7	0.0	5.7	5.7
Nondurable goods industries	2007 ...	2,518.2	2,448.1	2.9	2.4	1.9
	2006 ...	2,459.1	2,402.0	2.4	6.1	3.8
	2005 ...	2,317.2	2,315.0	0.1	13.3	13.2
	2004 ...	2,044.3	2,044.3	0.0	9.2	9.2
ANNUAL NEW ORDERS¹						
All manufacturing industries	2007 ...	5,131.2	5,043.9	1.7	1.9	1.4
	2006 ...	5,037.5	4,974.7	1.3	6.2	5.1
	2005 ...	4,744.8	4,735.0	0.2	11.5	11.3
	2004 ...	4,255.4	4,255.2	0.0	7.3	7.3
Durable goods industries	2007 ...	2,613.0	2,595.7	0.7	1.3	0.9
	2006 ...	2,578.4	2,572.7	0.2	6.2	6.3
	2005 ...	2,427.6	2,419.9	0.3	9.8	9.5
	2004 ...	2,211.1	2,210.9	0.0	5.7	5.7
Nondurable goods industries	2007 ...	2,518.2	2,448.1	2.9	2.4	1.9
	2006 ...	2,459.1	2,402.0	2.4	6.1	3.8
	2005 ...	2,317.2	2,315.0	0.1	13.3	13.2
	2004 ...	2,044.3	2,044.3	0.0	9.2	9.2
END-OF-YEAR UNFILLED ORDERS¹						
All manufacturing industries ²	2007 ...	771.8	807.8	-4.5	17.3	18.5
	2006 ...	657.9	681.8	-3.5	15.3	20.2
	2005 ...	570.4	567.4	0.5	15.7	15.3
	2004 ...	493.0	492.3	0.1	4.0	3.9
END-OF-YEAR INVENTORIES						
All manufacturing industries	2007 ...	516.0	514.2	0.4	3.7	3.6
	2006 ...	497.4	496.1	0.3	8.2	6.4
	2005 ...	459.9	466.2	-1.3	7.2	8.8
	2004 ...	429.0	428.3	0.2	7.9	7.7
Durable goods industries	2007 ...	311.6	311.3	0.1	3.5	3.5
	2006 ...	301.2	300.7	0.2	9.2	7.9
	2005 ...	275.7	278.6	-1.0	7.0	7.7
	2004 ...	257.6	258.7	-0.4	7.4	7.8
Nondurable goods industries	2007 ...	204.4	203.0	0.7	4.2	3.9
	2006 ...	196.2	195.4	0.4	6.5	4.2
	2005 ...	184.2	187.6	-1.8	7.5	10.6
	2004 ...	171.3	169.6	1.0	8.6	7.5

¹Data on new and unfilled orders are not available for the semiconductor industry.

² Unfilled orders exist only for durable goods industries.

Note: Percent changes based on unrounded data. Detail may not add to total because of independent rounding.

Table B. Manufacturers' Shipments, Inventories, and Orders Monthly Percent Changes: 2007

[Based on seasonally adjusted data]

Industry	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
SHIPMENTS												
ALL MANUFACTURING												
As published	-1.8	-0.6	2.1	1.0	0.8	-0.5	2.3	-1.7	0.1	1.2	1.3	-0.4
As revised	-2.6	0.7	1.5	1.2	0.9	-0.8	2.1	-1.9	-0.3	1.3	1.9	-0.6
Durable Goods Industries												
As published	-1.5	-1.5	1.3	2.0	0.2	-1.1	4.0	-1.9	-1.8	0.5	-0.4	-0.3
As revised	-2.7	0.3	0.7	1.5	0.1	-1.2	2.7	-1.5	-1.7	0.4	-0.1	-0.8
Primary Metals												
As published	-0.5	-1.7	3.0	2.8	2.2	-2.0	1.2	-2.5	0.0	1.7	-0.7	0.6
As revised	-1.7	-0.7	1.4	2.5	1.2	-1.7	2.6	-3.1	0.7	1.8	-0.2	0.3
Fabricated Metal Products												
As published	0.5	-1.0	0.6	2.0	0.5	-0.8	2.6	-0.7	-2.0	0.6	-0.4	-1.8
As revised	0.4	-0.2	0.0	2.0	-0.2	-0.9	2.3	-0.6	-2.4	0.7	-0.3	-1.8
Machinery												
As published	-8.9	3.0	2.9	3.3	-0.1	-0.8	2.3	-1.3	2.2	-2.1	0.8	3.1
As revised	-9.5	4.5	1.8	4.2	0.9	-1.9	1.7	-0.9	1.9	-2.8	1.9	3.0
Computers and Electronic Products												
As published	10.0	-6.0	-2.4	8.9	-2.4	-4.1	2.6	0.7	-0.6	2.2	-0.1	0.8
As revised	5.6	-0.2	-3.2	4.9	-1.8	-2.6	0.6	0.4	-1.3	1.7	0.4	-1.7
Electrical Equipment, Appliances, and Components												
As published	1.8	-0.3	2.9	1.9	-2.8	-0.6	1.8	-0.3	-1.1	0.9	-1.2	0.0
As revised	1.8	0.5	1.9	3.3	-3.2	-1.3	2.0	-0.1	-0.8	0.6	-1.1	-0.6
Transportation Equipment												
As published	-4.5	-1.7	2.3	-1.5	1.7	0.0	9.9	-5.2	-4.9	0.3	-0.4	-1.7
As revised	-5.7	0.1	2.1	-1.8	1.2	-0.6	6.3	-4.0	-3.5	0.4	-0.4	-2.0
Total Capital Goods												
As published	-2.4	-0.2	1.2	1.0	0.8	-0.8	1.9	1.1	0.3	-0.5	0.0	0.9
As revised	-3.4	2.0	-0.1	0.7	1.1	-0.7	0.7	1.5	0.2	-1.0	0.5	0.6
Nondefense Capital Goods												
As published	-2.7	-0.5	1.7	1.1	0.7	-0.5	1.0	1.6	0.9	-0.6	-0.5	1.4
As revised	-3.9	1.8	0.5	0.7	1.0	-0.4	-0.1	1.9	0.5	-1.1	0.1	0.9
Defense Capital Goods												
As published	0.4	1.7	-2.9	0.8	2.2	-4.0	9.3	-2.8	-4.3	-0.1	3.8	-3.4
As revised	1.3	3.4	-5.5	1.3	2.0	-2.8	7.8	-2.0	-2.5	-0.8	4.0	-2.4
Nondurable Goods Industries												
As published	-2.1	0.5	2.9	0.0	1.5	0.2	0.6	-1.4	2.1	2.0	3.0	-0.4
As revised	-2.5	1.2	2.3	1.0	1.6	-0.4	1.4	-2.3	1.0	2.2	3.8	-0.4
NEW ORDERS¹												
ALL MANUFACTURING												
As published	-4.2	0.5	4.1	0.5	-0.5	1.0	3.4	-3.5	0.3	0.7	1.7	2.0
As revised	-3.8	1.8	2.3	1.6	-0.4	0.1	3.4	-3.5	-0.3	1.1	1.8	1.9
Durable Goods Industries												
As published	-6.1	0.5	5.1	1.0	-2.4	1.8	5.9	-5.3	-1.4	-0.5	0.5	4.4
As revised	-4.9	2.3	2.3	2.1	-2.3	0.4	5.4	-4.6	-1.5	0.1	-0.3	4.1
Primary Metals												
As published	0.9	-3.8	5.8	7.1	-4.7	-6.0	6.2	-2.9	0.4	3.8	1.0	-0.3
As revised	0.3	-3.3	4.1	6.3	-2.9	-8.1	8.7	-3.5	1.6	2.8	1.5	-0.4
Fabricated Metal Products												
As published	0.7	-2.0	-1.0	3.7	-0.9	1.0	2.5	-1.6	-2.3	2.5	-0.5	1.1
As revised	1.8	-3.9	-1.2	4.8	-2.1	1.4	1.7	-0.7	-3.3	3.2	-1.3	1.9
Machinery												
As published	-10.0	0.6	5.4	-1.7	-0.7	3.5	5.4	-4.1	4.1	-2.8	-1.4	7.8
As revised	-11.5	5.5	3.3	-2.5	1.2	0.3	8.0	-4.3	1.6	-2.2	-1.7	8.9
Computers and Electronic Products												
As published	-6.6	4.6	-1.3	1.2	5.3	-4.9	6.1	-1.1	5.5	-8.2	-0.2	3.7
As revised	-7.9	10.7	-9.2	3.4	6.3	-6.7	6.0	0.8	1.4	-4.8	-1.5	2.1

See footnote at end of table.

Table B. **Manufacturers' Shipments, Inventories, and Orders Monthly Percent Changes: 2007—Con.**

[Based on seasonally adjusted data]

Industry	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
ALL MANUFACTURING—Con.												
Durable Goods Industries—Con.												
Electrical Equipment, Appliances, and Components												
As published	7.9	-3.6	2.3	3.5	-4.0	-1.2	-2.8	1.5	-3.3	2.0	0.5	1.2
As revised	7.7	-3.6	2.2	5.0	-5.0	0.0	-4.2	2.1	-2.4	1.1	1.5	-0.4
Transportation Equipment												
As published	-13.1	3.5	13.6	-1.7	-7.1	9.1	11.7	-12.4	-6.9	0.8	2.8	10.1
As revised	-8.7	6.0	9.0	1.1	-8.1	7.2	9.1	-11.6	-4.1	0.6	1.0	9.3
Total Capital Goods												
As published	-11.9	3.6	12.5	-0.3	-5.6	4.3	8.2	-9.9	0.7	-1.7	2.2	11.3
As revised	-9.1	7.5	6.3	2.6	-5.5	1.9	8.5	-9.7	1.3	-0.9	0.6	9.8
Nondefense Capital Goods												
As published	-16.5	6.1	13.8	-0.3	-6.8	6.3	4.8	-12.0	4.9	-2.6	5.4	5.4
As revised	-12.9	7.3	10.9	0.8	-6.5	3.6	6.3	-12.7	6.3	-2.9	4.3	3.5
Defense Capital Goods												
As published	46.1	-14.4	0.5	-0.2	7.2	-13.9	45.7	6.3	-26.8	5.9	-25.2	83.1
As revised	42.0	9.0	-31.1	25.0	5.8	-13.9	34.0	16.9	-32.4	20.5	-30.5	89.5
UNFILLED ORDERS¹												
ALL MANUFACTURING												
As published	0.5	0.8	1.8	1.9	0.9	1.6	2.3	1.2	1.1	1.0	1.2	2.5
As revised	0.6	1.0	1.4	1.9	0.9	1.3	2.2	1.1	1.0	1.0	1.0	2.3
Durable Goods Industries												
As published	0.5	0.8	1.8	1.9	0.9	1.6	2.3	1.2	1.1	1.0	1.2	2.5
As revised	0.6	1.0	1.4	1.9	0.9	1.3	2.2	1.1	1.0	1.0	1.0	2.3
Primary Metals												
As published	0.6	-0.9	1.0	4.2	-1.1	-4.0	-0.7	-1.0	-0.7	0.9	2.2	1.4
As revised	0.5	-1.3	0.6	3.3	0.2	-4.4	-0.5	-0.8	-0.1	0.6	1.9	1.4
Fabricated Metal Products												
As published	1.1	0.6	-0.2	0.6	0.0	0.8	0.8	0.3	0.2	1.0	1.0	2.3
As revised	1.8	-0.1	-0.7	0.6	-0.3	0.8	0.5	0.5	0.0	1.2	0.7	2.3
Machinery												
As published	1.6	0.8	1.6	-0.1	-0.3	1.2	2.3	1.2	1.9	1.6	0.8	2.4
As revised	1.1	1.5	2.0	-0.3	-0.2	0.6	2.7	1.4	1.3	1.5	0.3	2.2
Computers and Electronic Products												
As published	-0.4	0.3	0.1	0.2	0.9	0.1	2.0	1.0	1.9	0.0	-0.1	0.5
As revised	-0.3	1.0	-0.7	0.3	1.2	-0.4	1.6	1.2	1.3	0.3	-0.1	0.4
Electrical Equipment, Appliances, and Components												
As published	3.1	1.4	1.1	1.8	1.2	0.9	-1.1	-0.3	-1.3	-0.8	-0.1	0.5
As revised	2.9	0.8	1.0	1.8	0.9	1.4	-1.3	-0.4	-1.1	-0.9	0.3	0.4
Transportation Equipment												
As published	0.3	1.1	2.9	2.7	1.2	2.6	3.1	1.6	1.2	1.2	1.7	3.3
As revised	0.3	1.3	2.5	3.0	1.2	2.5	3.1	1.5	1.3	1.3	1.5	3.2
Total Capital Goods												
As published	0.3	0.9	2.6	2.3	1.2	2.0	3.0	1.1	1.2	1.0	1.3	2.7
As revised	0.3	1.1	2.2	2.4	1.3	1.7	2.9	1.0	1.2	1.2	1.2	2.5
Nondefense Capital Goods												
As published	0.2	1.4	3.7	3.3	1.7	2.9	3.6	0.9	1.6	1.2	2.2	2.9
As revised	0.3	1.4	3.4	3.4	1.7	2.5	3.6	0.7	1.7	1.3	2.0	2.4
Defense Capital Goods												
As published	0.5	-0.5	-0.3	-0.3	-0.1	-0.6	1.1	1.7	-0.1	0.3	-1.4	2.4
As revised	0.2	0.5	-1.2	-0.1	0.1	-0.6	0.7	2.0	-0.4	0.7	-1.5	2.7

See footnote at end of table.

Table B. **Manufacturers' Shipments, Inventories, and Orders Monthly Percent Changes: 2007—Con.**

[Based on seasonally adjusted data]

Industry	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
TOTAL INVENTORIES												
AII MANUFACTURING												
As published	0.0	0.1	0.2	0.4	0.4	0.2	0.1	-0.1	0.6	0.2	0.7	0.9
As revised	0.1	0.1	0.1	0.3	0.4	0.2	0.1	-0.1	0.8	0.1	0.7	0.8
Durable Goods Industries												
As published	0.4	0.1	0.1	0.4	0.1	0.0	0.1	-0.1	0.3	0.4	0.7	1.1
As revised	0.6	0.2	0.0	0.2	0.1	0.0	0.0	-0.1	0.4	0.3	0.6	1.0
Primary Metals												
As published	-0.6	-0.3	1.1	0.5	-0.1	1.3	-0.2	-0.6	-0.9	-1.3	-0.7	-0.1
As revised	-0.4	-0.3	0.6	0.4	-0.8	1.2	0.6	-0.3	-0.7	-1.1	-0.6	0.2
Fabricated Metal Products												
As published	0.2	-0.1	0.1	0.1	0.0	-0.4	0.1	-0.5	0.8	0.7	0.4	0.6
As revised	1.4	-0.2	0.1	0.1	-0.3	-0.1	0.1	-0.9	0.6	0.5	0.0	1.0
Machinery												
As published	0.6	0.7	0.0	0.4	0.1	0.5	0.6	0.3	0.8	0.6	0.0	0.7
As revised	0.6	0.8	-0.1	0.5	0.2	0.5	0.7	0.2	0.7	0.4	0.3	0.4
Computers and Electronic Products												
As published	0.7	-0.4	-0.9	-0.7	-0.2	-0.6	-1.1	0.3	0.4	0.6	0.8	0.6
As revised	1.3	-0.5	-0.9	-0.3	0.3	-1.6	-2.8	0.4	1.6	0.5	0.6	0.6
Electrical Equipment, Appliances, and Components												
As published	-0.8	-0.2	-0.1	0.4	-0.6	0.0	0.8	-0.6	-0.2	1.5	1.7	0.6
As revised	-0.4	-0.5	0.2	0.4	-0.7	-0.2	1.0	0.1	-1.2	2.1	1.4	0.9
Transportation Equipment												
As published	1.1	0.4	0.6	1.6	0.5	-0.2	0.4	0.1	0.4	0.5	1.9	2.7
As revised	0.9	0.6	0.3	1.3	0.4	0.2	0.7	0.1	0.5	0.3	1.8	2.6
Total Capital Goods												
As published	0.2	0.3	0.4	0.6	0.6	0.2	0.5	0.3	0.5	0.9	1.1	1.6
As revised	0.3	0.4	0.2	0.3	0.9	-0.1	0.2	0.3	0.8	0.7	1.1	1.4
Nondefense Capital Goods												
As published	-0.1	0.4	0.6	0.3	0.8	0.1	0.5	0.4	0.3	0.7	1.1	1.2
As revised	0.0	0.5	0.3	0.1	1.3	-0.3	0.1	0.4	0.6	0.6	1.2	1.0
Defense Capital Goods												
As published	2.6	-0.6	-1.1	2.7	-0.9	0.4	0.5	-0.8	2.1	1.8	1.2	4.2
As revised	2.4	-0.8	-0.6	2.2	-1.3	0.8	0.8	-0.7	1.9	1.4	0.8	4.3
Nondurable Goods Industries												
As published	-0.7	0.0	0.4	0.5	0.9	0.6	0.2	-0.1	1.0	-0.2	0.7	0.6
As revised	-0.6	0.0	0.2	0.5	0.9	0.5	0.3	-0.2	1.2	-0.1	0.9	0.5

¹Data on new and unfilled orders are not available for the semiconductor industry.

Chapter A. Sample of M3 Report Form

Industry category description (see Appendix B).

Month and year of report

Prompt reporting ensures the timely receipt of your data.

Name and telephone number of person to contact at the Census Bureau regarding this report.

Name and telephone number of person to contact at your company regarding this report.

Mark the box which best describes current accounting period.

Data for new orders and unfilled orders are only requested for some industry categories

FORM M-3(SD)
(01-13-2006)

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

MANUFACTURERS' SHIPMENTS, INVENTORIES, AND ORDERS
FORM APPROVED: OMB NO. 0807-0008 EXPIRES APRIL 30, 2009

32240

NOTICE - This report is authorized by law (Title 13, United States Code). By Section 9 of the same law, your report to the Census Bureau is confidential. It may be seen only by sworn Census employees and may be used only for statistical purposes. The law also provides that copies retained in your files are immune from legal process.

Description: **COMPUTER MANUFACTURING**

CENSUS USE RP MC # F FP AI

JANUARY 2008
Please correct any errors in name, address, and ZIP Code.

PLEASE RETURN YOUR COMPLETED FORM WITHIN 15 DAYS:
Fax form to 1-800-272-4096
or
Use TDE on 1-800-428-9659
or
U.S. Census Bureau
4600 Silver Hill Rd MCD/M3
Washington, DC 20233
www.census.gov/m3

Census contact: **CHRIS SAVAGE**
Area Code: 301 Number: 763-4804

Your company contact: **COMPANY CONTACT**
Area Code: 555 Number: 555-5555 Ext: 555

Ceased operations
 Sold to another company - Enter name and date in "Remarks"
 Acquired another manufacturing operation - Enter name and date in "Remarks"

CFN: 1 2 3 4 5 6 0 0 0 0 1 Industry: 3 4 A

Description of reporting items (Definitions of terms are provided on the back of the form)	Accounting Period	Report all figures in THOUSANDS of dollars.		
		JAN 2008	DEC 2007	NOV 2007
1 SHADE the ONE circle which best describes each accounting period. If "Other," please describe in "Remarks."	P	<input type="radio"/> Cal. Mo. <input type="radio"/> 4 week <input type="radio"/> 5 week	<input type="radio"/> Other <input type="radio"/> Cal. Mo. <input type="radio"/> 4 week <input type="radio"/> 5 week	<input type="radio"/> Other <input type="radio"/> Cal. Mo. <input type="radio"/> 4 week <input type="radio"/> 5 week
2 Net Shipments, Manufactured in the U.S.	S			
3 New Orders (Net of Cancellations) [If applicable]	N			
4 Order Backlog (Unfilled Orders) [If applicable]	U			
5 Total Inventories, Warehoused in US (Current Cost or Market)	I			
6 Material and Supplies	M			
7 Work-in-Process	W			
8 Finished Goods	F			

Remarks: _____

This form is substantially accurate and has been prepared in accordance with the instructions.

Title _____ Date _____
Signature of authorized person _____

Your company's Census File Number, (CFN)

For each item listed, enter the figure in thousands of dollars.

Compare figures for current and previous periods. Correct previous periods if wrong. Explain substantial differences, or large month-to-month fluctuations in the data, in the "Remarks" section.

Chapter B.

Composition of Industry Categories in Terms of the North American Industry Classification System (NAICS)

M3/NAICS code	M3 category title with comparable NAICS titles	M3/NAICS code	M3 category title with comparable NAICS titles
	FOOD PRODUCTS		TEXTILE MILLS—Con.
11A	Grain and Oilseed Milling	313230	Nonwoven Fabric
311211	Flour	313241	Weft Knit Fabric
311212	Rice	313249	Other Knit Fabric and Lace
311213	Malt	313311	Broadwoven Fabric Finishing
311221	Wet Corn	313312	Textile and Fabric Finishing (Except Broadwoven Fabric)
311222	Soybean Processing	313320	Fabric Coating
311223	Other Oilseed Processing		
311225	Fats and Oils Refining and Blending		
311230	Breakfast Cereals		
11B	Dairy Product Manufacturing	14A	Textile Product Mills
311511	Fluid Milk	314110	Carpets and Rugs
311512	Creamery Butter	314121	Curtains and Draperies
311513	Cheese	314129	Other Household Textile Products
311514	Dry, Condensed, and Evaporated Milk	314911	Textile Bags
311520	Ice Cream and Frozen Desserts	314912	Canvas and Related Products
11C	Meat, Poultry, and Seafood Product Processing	314991	Rope, Cordage, and Twine
311611	Animal (Except Poultry) Slaughtering	314992	Tire Cord and Tire Fabrics
311612	Meat Processed From Carcasses	314999	All Other Miscellaneous Textile Products
311613	Rendering and Meat Byproducts		
311615	Poultry Processing		
311711	Seafood Canning		
311712	Fresh and Frozen Seafood		
11D	Other Food Manufacturing	15A	Apparel
311111	Dog and Cat Food	315111	Apparel Manufacturing
311119	Other Animal Food	315119	Sheer Hosiery
311311	Sugarcane	315191	Other Hosiery and Socks
311312	Cane Sugar Refining	315192	Outerwear Knitting
311313	Beet Sugar	315211	Underwear and Nightwear Knitting
311320	Chocolate and Confectionery From Cacao Beans	315212	Men's and Boys' Cut and Sew Apparel Contractors
311330	Confectionery From Purchased Chocolate	315221	Women's, Girls', and Infants' Cut and Sew Apparel Contractors
311340	Nonchocolate Confectionery	315222	Men's and Boys' Cut and Sew Underwear and Nightwear
311411	Frozen Fruits, Juices, and Vegetables	315223	Men's and Boys' Cut and Sew Suits, Coats, and Overcoats
311412	Frozen Specialty Foods	315224	Men's and Boys' Cut and Sew Shirts (Except Work Shirts)
311421	Fruit and Vegetable Canning	315225	Men's and Boys' Cut and Sew Trousers, Slacks, and Jeans
311422	Specialty Canning	315228	Men's and Boys' Cut and Sew Work Clothing
311423	Dried and Dehydrated Foods	315231	Men's and Boys' Cut and Sew Other Outerwear
311811	Retail Bakeries	315232	Women's and Girls' Cut and Sew Lingerie, Loungewear, and Nightwear
311812	Commercial Bakeries	315233	Women's and Girls' Cut and Sew Blouses and Shirts
311813	Frozen Cakes, Pies, and Other Pastries	315234	Women's and Girls' Cut and Sew Dresses
311821	Cookies and Crackers		Women's and Girls' Cut and Sew Suits, Coats, Tailored Jackets, and Skirts
311822	Flour Mixes and Dough From Purchased Flour	315239	Women's and Girls' Cut and Sew Other Outerwear
311823	Dry Pasta	315291	Infants' Cut and Sew Apparel
311830	Tortillas	315292	Fur and Leather Apparel
311911	Roasted Nuts and Peanut Butter	315299	All Other Cut and Sew Apparel
311919	Other Snack Foods	315991	Hats, Caps, and Millinery
311920	Coffee and Tea	315992	Gloves and Mittens
311930	Flavoring Syrups and Concentrates	315993	Men's and Boys' Neckwear
311941	Mayonnaise, Dressing, and Other Prepared Sauces	315999	Other Apparel Accessories and Other Apparel
311942	Spices and Extracts		
311991	Perishable Prepared Foods		
311999	All Other Miscellaneous Foods		
	BEVERAGE AND TOBACCO PRODUCTS	16A	Leather and Allied Product Manufacturing
12A	Beverage Manufacturing	316110	Leather and Hide Tanning and Finishing
312111	Soft Drinks	316211	Rubber and Plastics Footwear
312112	Bottled Water	316212	House Slippers
312113	Ice	316213	Men's Footwear (Except Athletic)
312120	Breweries	316214	Women's Footwear (Except Athletic)
312130	Wineries	316219	Other Footwear
312140	Distilleries	316991	Luggage
12B	Tobacco Manufacturing	316992	Women's Handbags and Purses
312210	Tobacco Stemming and Redrying	316993	Personal Leather Goods (Except Women's Handbags and Purses)
312221	Cigarettes	316999	All Other Leather Goods
312229	Other Tobacco Products		
	TEXTILE MILLS	21A	WOOD PRODUCTS
13A	Textile Mills	321991	Wood Building and Mobile Home Manufacturing
313111	Yarn Spinning	321992	Manufactured Homes (Mobile Homes)
313112	Yarn Texturing, Throwing, and Twisting		Prefabricated Wood Buildings
313113	Thread	21B	Other Wood Product Manufacturing
313210	Broadwoven Fabric	321113	Sawmills
313221	Narrow Fabric	321114	Wood Preservation
313222	Schiffli Machine Embroidery	321211	Hardwood Veneer and Plywood
		321212	Softwood Veneer and Plywood
		321213	Engineered Wood Members (Except Trusses)
		321214	Trusses
		321219	Reconstituted Wood Products

M3/NAICS code	M3 category title with comparable NAICS titles	M3/NAICS code	M3 category title with comparable NAICS titles
	WOOD PRODUCTS—Con.		CHEMICAL PRODUCTS—Con.
321911	Wood Windows and Doors	325199	All Other Basic Organic Chemicals
321912	Cut Stock, Resawing Lumber, and Planing	325211	Plastics Material and Resins
321918	Other Millwork (Including Flooring)	325212	Synthetic Rubber
321920	Wood Containers and Pallets	325221	Cellulosic Organic Fibers
321999	All Other Miscellaneous Wood Products	325222	Noncellulosic Organic Fibers
	PAPER PRODUCTS	325611	Soaps and Detergents
	Pulp, Paper, and Paperboard Mills	325612	Polish and Other Sanitation Goods
322110	Pulp	325613	Surface Active Agents
322121	Paper (Except Newsprint)	325620	Toilet Preparations
322122	Newsprint	325910	Printing Inks
322130	Paperboard	325920	Explosives
	Paperboard Container Manufacturing	325991	Custom Compounding of Purchased Resins
322211	Corrugated and Solid Fiber Boxes	325992	Photographic Film, Paper, Plates, and Chemicals
322212	Folding Paperboard Boxes	325998	All Other Miscellaneous Chemical Products and Preparations
322213	Setup Paperboard Boxes		
322214	Fiber Cans, Tubes, Drums, and Similar Products	26A	PLASTICS AND RUBBER PRODUCTS
322215	Nonfolding Sanitary Food Containers	326211	Tire Manufacturing
	Other Paper Manufacturing	326212	Tires (Except Retreading)
322221	Coated and Laminated Packaging Paper and Plastics Film		Tire Retreading
322222	Coated and Laminated Paper	26B	Other Plastics and Rubber Product Manufacturing
322223	Plastics, Foil, and Coated Paper Bags	326111	Unsupported Plastics Bags
322224	Uncoated Paper and Multiwall Bags	326112	Unsupported Plastics Packaging Film and Sheets
322225	Laminated Aluminum Foil for Flexible Packaging Uses	326113	Unsupported Plastics Film and Sheets (Except Packaging)
322226	Surface-Coated Paperboard	326121	Unsupported Plastics Profile Shapes
322231	Die-Cut Paper and Paperboard Office Supplies	326122	Plastics Pipe and Pipe Fitting
322232	Envelopes	326130	Laminated Plastics Plate, Sheet, and Shapes
322233	Stationery, Tablets, and Related Products	326140	Polystyrene Foam Products
322291	Sanitary Paper Products	326150	Urethane and Other Foam Products (Except Polystyrene)
322299	All Other Converted Paper Products	326160	Plastics Bottles
	PRINTING	326191	Plastics Plumbing Fixtures
	Printing and Related Support Activities	326192	Resilient Floor Coverings
323110	Commercial Lithographic	326199	All Other Plastics Products
323111	Commercial Gravure	326220	Rubber and Plastics Hoses and Belting
323112	Commercial Flexographic	326291	Rubber Product for Mechanical Use
323113	Commercial Screen	326299	All Other Rubber Products
323114	Quick		
323115	Digital	27A	NONMETALLIC MINERAL PRODUCTS
323116	Manifold Business Forms	327111	Nonmetallic Mineral Product Manufacturing
323117	Books	327112	Vitreous China Plumbing Fixture and China and Earthenware Bathroom Accessories
323118	Blankbook, Looseleaf Binders, and Devices	327113	Vitreous China, Fine Earthenware, and Other Pottery Products
323119	Other Commercial	327121	Porcelain Electrical Supplies
323121	Tradebinding and Related Work	327122	Brick and Structural Clay Tiles
323122	Prepress Services	327123	Ceramic Wall and Floor Tiles
	PETROLEUM AND COAL PRODUCTS	327124	Other Structural Clay Products
	Petroleum Refineries	327125	Clay Refractories
324110	Petroleum	327211	Nonclay Refractories
	Asphalt Paving, Roofing, and Saturated Materials Manufacturing	327212	Flat Glass
324121	Asphalt Paving Mixtures and Blocks	327213	Other Pressed and Blown Glass and Glassware
324122	Asphalt Shingle and Coating Materials	327215	Glass Containers
	Other Petroleum and Coal Products Manufacturing	327310	Glass Product Made of Purchased Glass
324191	Petroleum Lubricating Oils and Greases	327320	Cement
324199	All Other Petroleum and Coal Products	327331	Ready-Mix Concrete
	CHEMICAL PRODUCTS	327332	Concrete Block and Brick
	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	327390	Concrete Pipe
325311	Nitrogenous Fertilizer	327410	Other Concrete Products
325312	Phosphatic Fertilizer	327420	Lime
325314	Fertilizer (Mixing Only)	327910	Gypsum Products
325320	Pesticides and Agricultural Chemicals	327991	Abrasive Products
	Pharmaceutical and Medicine Manufacturing	327992	Cut Stone and Stone Products
325411	Medicinals and Botanicals	327993	Ground or Treated Mineral and Earth
325412	Pharmaceutical Preparations	327999	Mineral Wool
325413	In-Vitro Diagnostic Substances		All Other Miscellaneous Nonmetallic Mineral Products
325414	Biological Products (Except Diagnostic)	31A	PRIMARY METALS
	Paint, Coating, and Adhesive Manufacturing	331111	Iron and Steel Mills and Ferrous and Ferroalloy and Steel Products Manufacturing
325510	Paints and Coatings	331112	Iron and Steel
325520	Adhesives	331210	Electrometallurgical Ferroalloy Products
	Other Chemical Manufacturing	331221	Iron and Steel Pipes and Tubes From Purchased Steel
325110	Petrochemicals	331222	Rolled Steel Shapes
325120	Industrial Gases		Steel Wire Drawing
325131	Inorganic Dyes and Pigments	31B	Alumina, Aluminum, and Nonferrous Metal Production and Processing
325132	Synthetic Organic Dyes and Pigments	331311	Alumina Refining
325181	Alkalies and Chlorines	331312	Primary Aluminum Production
325182	Carbon Black	331314	Secondary Smelting and Alloying of Aluminum
325188	All Other Basic Inorganic Chemicals	331315	Aluminum Sheet, Plate, and Foil
325191	Gum and Wood Chemicals	331316	Aluminum Extruded Products
325192	Cyclic Crudes and Intermediates	331319	Other Aluminum Rolling and Drawing
325193	Ethyl Alcohol	331411	Primary Smelting and Refining of Copper
		331419	Primary Smelting and Refining of Nonferrous Metal (Except Copper and Aluminum)
		331421	Copper Rolling, Drawing, and Extruding
		331422	Copper Wire (Except Mechanical) Drawing
		331423	Secondary Smelting, Refining, and Alloying of Copper

M3/NAICS code	M3 category title with comparable NAICS titles	M3/NAICS code	M3 category title with comparable NAICS titles
	PRIMARY METALS—Con.		MACHINERY—Con.
331491	Nonferrous Metal (Except Copper and Aluminum) Rolling, Drawing, Extruding, and Alloying	333210	Sawmill and Woodworking Machinery
331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (Except Copper and Aluminum)	333220	Plastics and Rubber Industry Machinery
31C	Ferrous Metal Foundries	333291	Paper Industry Machinery
331511	Iron	333292	Textile Machinery
331512	Steel Investment	333293	Printing Machinery and Equipment
331513	Steel (Except Investment)	333294	Food Product Machinery
31D	Nonferrous Metal Foundries	333295	Semiconductor Machinery
331521	Aluminum Die-Casting	333298	All Other Industrial Machinery
331522	Nonferrous (Except Aluminum) Die-Casting	33F	Vending, Laundry, and Other Machinery Manufacturing
331524	Aluminum (Except Die-Casting)	333311	Automatic Vending Machines
331525	Copper (Except Die-Casting)	333312	Commercial Laundry, Drycleaning, and Pressing Machines
331528	Other Nonferrous (Except Die-Casting)	333319	Other Commercial and Service Industry Machinery
	FABRICATED METAL PRODUCTS	33G	Photographic Equipment Manufacturing
32A	Forging and Stamping	333313	Office Machinery
332111	Iron and Steel Forging	333314	Optical Instruments and Lenses
332112	Nonferrous Forging	333315	Photographic and Photocopying Equipment
332114	Custom Roll Forming	33H	Ventilation, Heating, Air-Conditioning, and Refrigeration Equipment Manufacturing
332115	Crowns and Closures	333411	Air Purification Equipment
332116	Metal Stampings	333412	Industrial and Commercial Fans and Blowers
332117	Powder Metallurgy Parts	333414	Heating Equipment (Except Warm Air Furnaces)
32B	Cutlery and Handtool Manufacturing	333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment
332211	Cutlery and Flatware (Except Precious)	33I	Metalworking Machinery Manufacturing
332212	Hand and Edge Tools	333511	Industrial Molds
332213	Saw Blades and Handsaws	333512	Machine Tools (Metal Cutting Types)
332214	Kitchen Utensils, Pots, and Pans	333513	Machine Tools (Metal Forming Types)
32C	Boiler, Tank, and Shipping Container Manufacturing	333514	Special Dies and Tools, Die Sets, Jigs, and Fixtures
332410	Power Boilers and Heat Exchangers	333515	Cutting Tools and Machine Tool Accessories
332420	Metal Tanks (Heavy Gauge)	333516	Rolling Mill Machinery and Equipment
332431	Metal Cans	333518	Other Metalworking Machinery
332439	Other Metal Containers	33J	Turbine and Generator Manufacturing
32D	Metal Valve Manufacturing	333611	Turbines and Turbine Generator Set Units
332911	Industrial Valves	33K	Other Power Transmission Equipment Manufacturing
332912	Fluid Power Valves and Hose Fittings	333612	Speed Changers, Industrial High-Speed Drives, and Gears
332913	Plumbing Fixture Fittings and Trim	333613	Mechanical Power Transmission Equipment
332919	Other Metal Valve and Pipe Fittings	333618	Other Engine Equipment
32E	Small Arms and Ordnance Manufacturing, Nondefense	33L	Pump and Compressor Manufacturing
332992	Small Arms Ammunition	333911	Pumps and Pumping Equipment
332993	Ammunition (Except Small Arms)	333912	Air and Gas Compressors
332994	Small Arms	333913	Measuring and Dispensing Pumps
332995	Other Ordnance and Accessories	33M	Material Handling Equipment Manufacturing
32F	Small Arms and Ordnance Manufacturing, Defense	333921	Elevators and Moving Stairways
332992	Small Arms Ammunition	333922	Conveyors and Conveying Equipment
332993	Ammunition (Except Small Arms)	333923	Overhead Traveling Cranes, Hoists, and Monorail Systems
332994	Small Arms	333924	Industrial Trucks, Tractors, Trailers, and Stacker Machinery
332995	Other Ordnance and Accessories	33N	All Other Machinery Manufacturing
32G	Other Fabricated Metal Product Manufacturing	333991	Power-Driven Handtools
332311	Prefabricated Metal Buildings and Components	333992	Welding and Soldering Equipment
332312	Fabricated Structural Metal	333993	Packaging Machinery
332313	Plate Work	333994	Industrial Process Furnaces and Ovens
332321	Metal Windows and Doors	333995	Fluid Power Cylinders and Actuators
332322	Sheet Metal Work	333996	Fluid Power Pumps and Motors
332323	Ornamental and Architectural Metal Work	333997	Scales and Balances (Except Laboratory)
332510	Hardware	333999	All Other Miscellaneous General Purpose Machinery
332611	Spring (Heavy Gauge)		COMPUTERS AND ELECTRONIC PRODUCTS
332612	Spring (Light Gauge)	34A	Computer Manufacturing
332618	Other Fabricated Wire Products	334111	Computers
332710	Machine Shops	34B	Computer Storage Device Manufacturing
332721	Precision Turned Products	334112	Computer Storage Devices
332722	Bolts, Nuts, Screws, Rivets, and Washers	34C	Other Computer Peripheral Equipment Manufacturing
332811	Metal Heat Treating	334113	Computer Terminals
332812	Metal Coating, Engraving (Except Jewelry and Silverware), and Allied Services to Manufacturers	334119	Other Computer Peripheral Equipment
332813	Electroplating, Plating, Polishing, Anodizing, and Coloring	34D	Communications Equipment Manufacturing, Nondefense
332991	Ball and Roller Bearings	334210	Telephone Apparatus
332996	Fabricated Pipe and Pipe Fittings	334220	Radio and Television Broadcasting and Wireless Communications Equipment
332997	Industrial Patterns		Other Communications Equipment
332998	Enameled Iron and Metal Sanitary Ware	34E	Communications Equipment Manufacturing, Defense
332999	All Other Miscellaneous Fabricated Metal Products	334210	Telephone Apparatus
	MACHINERY	334220	Radio and Television Broadcasting and Wireless Communications Equipment
33A	Farm Machinery and Equipment Manufacturing	334290	Other Communications Equipment
333111	Farm Machinery and Equipment	34F	Audio and Video Equipment Manufacturing
33B	Lawn and Garden Tractors and Equipment Manufacturing	334310	Audio and Video Equipment
333112	Lawn and Garden Tractors and Home Lawn and Garden Equipment	34G	Semiconductor and Related Device Manufacturing
33C	Construction Machinery Manufacturing	334413	Semiconductors and Related Devices
333120	Construction Machinery	34H	Other Electronic Component Manufacturing
33D	Mining, Oil, and Gas Field Machinery Manufacturing	334411	Electron Tubes
333131	Mining Machinery and Equipment	334412	Bare Printed Circuit Boards
333132	Oil and Gas Field Machinery and Equipment	334414	Electronic Capacitors
33E	Industrial Machinery Manufacturing	334415	Electronic Resistors

M3/NAICS code	M3 category title with comparable NAICS titles	M3/NAICS code	M3 category title with comparable NAICS titles
	COMPUTERS AND ELECTRONIC PRODUCTS—Con.		TRANSPORTATION EQUIPMENT—Con.
334416	Electronic Coils, Transformers, and Other Inductors	336360	Motor Vehicle Seating and Interior Trim
334417	Electronic Connectors	336370	Motor Vehicle Metal Stamping
334418	Printed Circuit Assemblies (Electronic Assemblies)	336391	Motor Vehicle Air-Conditioning
334419	Other Electronic Components	336399	All Other Motor Vehicle Parts
34I	Search and Navigation Equipment Manufacturing, Nondefense	36F	Aircraft Manufacturing, Nondefense
334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instruments	336411	Aircraft
34J	Search and Navigation Equipment Manufacturing, Defense	36G	Aircraft Manufacturing, Defense
334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instruments	336411	Aircraft
34K	Electromedical, Measuring, and Control Instrument Manufacturing	36H	Aircraft Engine and Parts Manufacturing, Nondefense
334510	Electromedical and Electrotherapeutic Apparatus	336412	Aircraft Engines and Engine Parts
334512	Automatic Environmental Controls for Residential, Commercial, and Appliance Use	336413	Other Aircraft Parts and Auxiliary Equipment
334513	Instruments and Related Products for Measuring, Displaying, and Controlling Industrial Process Variables	36I	Aircraft Engine and Parts Manufacturing, Defense
334514	Totalizing Fluid Meters and Counting Devices	336412	Aircraft Engines and Engine Parts
334515	Instruments for Measuring and Testing Electricity and Electrical Signals	336413	Other Aircraft Parts and Auxiliary Equipment
334516	Analytical Laboratory Instruments	36J	Missile, Space Vehicle, and Parts Manufacturing, Defense
334517	Irradiation Apparatus	336414	Guided Missiles and Space Vehicles
334518	Watches, Clocks, and Parts	336415	Guided Missiles and Space Vehicle Propulsion Units and Propulsion Unit Parts
334519	Other Measuring and Controlling Devices	336419	Other Guided Missiles and Space Vehicle Parts and Auxiliary Equipment
34L	Manufacturing and Reproducing Magnetic and Optical Media	36K	Railroad Rolling Stock
334611	Software Reproducing	336510	Railroad Rolling Stock
334612	Prerecorded Compact Discs (Except Software), Tapes, and Record Reproducing	36L	Ship and Boat Building, Nondefense
334613	Magnetic and Optical Recording Media	336611	Ship Building and Repairing
	ELECTRICAL EQUIPMENT, APPLIANCES, AND COMPONENTS	336612	Boat Building
35A	Electric Lighting Equipment Manufacturing	36M	Ship and Boat Building, Defense
335110	Electric Lamp Bulbs and Parts	336611	Ship Building and Repairing
335121	Residential Electric Lighting Fixtures	336612	Boat Building
335122	Commercial, Industrial, and Institutional Electric Lighting Fixtures	36N	Other Transportation Equipment
335129	Other Lighting Equipment	336991	Motorcycles, Bicycles, and Parts
35B	Household Appliance Manufacturing	336992	Military Armored Vehicles, Tanks, and Tank Components
335211	Electric Housewares and Household Fans	336999	All Other Transportation Equipment
335212	Household Vacuum Cleaners		
335221	Household Cooking Appliances	37A	Household Furniture and Kitchen Cabinet Manufacturing
335222	Household Refrigerators and Home Freezers	337110	Wood Kitchen Cabinets and Counter Tops
335224	Household Laundry Equipment	337121	Upholstered Household Furniture
335228	Other Major Household Appliances	337122	Wood Household Furniture (Except Upholstered)
35C	Electrical Equipment Manufacturing	337124	Metal Household Furniture
335311	Power, Distribution, and Specialty Transformers	337125	Household Furniture (Except Wood and Metal)
335312	Motors and Generators	337129	Wood Television, Radio, and Sewing Machine Cabinets
335313	Switchgear and Switchboard Apparatus	37B	Office Furniture and Institutional Furniture Manufacturing
335314	Relays and Industrial Controls	337127	Institutional Furniture
35D	Battery Manufacturing	337211	Wood Office Furniture
335911	Storage Batteries	337212	Custom Architectural Woodwork and Millwork
335912	Primary Batteries	337214	Office Furniture (Except Wood)
35E	Other Electrical Equipment, Appliance, and Component Manufacturing	337215	Showcases, Partitions, Shelving, and Lockers
335921	Fiber Optic Cables	37C	Other Furniture Related Product Manufacturing
335929	Other Communication and Energy Wires	337910	Mattresses
335931	Current-Carrying Wiring Devices	337920	Blinds and Shades
335932	Noncurrent-Carrying Wiring Devices		
335991	Carbon and Graphite Products	39A	Medical Equipment and Supplies Manufacturing
335999	All Other Miscellaneous Electrical Equipment and Components	339111	Laboratory Apparatus and Furniture
	TRANSPORTATION EQUIPMENT	339112	Surgical and Medical Instruments
36A	Automobile Manufacturing	339113	Surgical Appliances and Supplies
336111	Automobiles	339114	Dental Equipment and Supplies
36B	Light Truck and Utility Vehicle Manufacturing	339115	Ophthalmic Goods
336112	Light Trucks and Utility Vehicles	339116	Dental Laboratories
36C	Heavy Duty Truck Manufacturing	39B	Sporting Goods, Doll, Toy, and Game Manufacturing
336120	Heavy Duty Trucks	339920	Sporting and Athletic Goods
36D	Motor Vehicle Body and Trailer Manufacturing	339931	Dolls and Stuffed Toys
336211	Motor Vehicle Bodies	339932	Games, Toys, and Children's Vehicles
336212	Truck Trailers	39C	Office Supplies (Except Paper) Manufacturing
336213	Motor Homes	339941	Pens and Mechanical Pencils
336214	Travel Trailers and Campers	339942	Lead Pencils and Art Goods
36E	Motor Vehicle Parts Manufacturing	339943	Marking Devices
336311	Carburetors, Pistons, Piston Rings, and Valves	339944	Carbon Paper and Inked Ribbons
336312	Gasoline Engines and Engine Parts	39D	Other Miscellaneous Manufacturing
336321	Vehicular Lighting Equipment	339911	Jewelry (Except Costume)
336322	Other Motor Vehicle Electrical and Electronic Equipment	339912	Silverware and Holloware
336330	Motor Vehicle Steering and Suspension Components (Except Spring)	339913	Jewelers' Material and Lapidary Work
336340	Motor Vehicle Brake Systems	339914	Costume Jewelry and Novelties
336350	Motor Vehicle Transmission and Power Train Parts	339950	Signs
		339991	Gaskets, Packing, and Sealing Devices
		339992	Musical Instruments
		339993	Fasteners, Buttons, Needles, and Pins
		339994	Brooms, Brushes, and Mops
		339995	Burial Caskets
		339999	All Other Miscellaneous Products

Chapter C.

Composition of Aggregate Data Series in Terms of M3 Industry Series

NONDEFENSE CAPITAL GOODS	CONSUMER NONDURABLE GOODS
32E Small arms and ordnance manufacturing, nondefense	11A Grain and oilseed milling
33A Farm machinery and equipment manufacturing	11B Dairy product manufacturing
33C Construction machinery manufacturing	11C Meat, poultry, and seafood product processing
33D Mining, oil, and gas field machinery manufacturing	11D Other food manufacturing
33E Industrial machinery manufacturing	12A Beverage manufacturing
33F Vending, laundry, and other machinery manufacturing	12B Tobacco manufacturing
33G Photographic equipment manufacturing	14A Textile product mills
33I Metalworking machinery manufacturing	15A Apparel manufacturing
33J Turbine and generator manufacturing	16A Leather and allied product manufacturing
33K Other power transmission equipment manufacturing	22A Pulp, paper, and paperboard mills
33L Pump and compressor manufacturing	22C Other paper manufacturing
33M Material handling equipment manufacturing	24A Petroleum refining
33N All other machinery manufacturing	24C Other petroleum and coal products manufacturing
34A Computer manufacturing	25B Pharmaceutical and medicine manufacturing
34B Computer storage device manufacturing	
34C Other computer peripheral equipment manufacturing	CONSTRUCTION MATERIALS AND SUPPLIES
34D Communications equipment manufacturing, nondefense	21B Other wood product manufacturing
34I Search and navigation equipment manufacturing, nondefense	24B Asphalt paving, roofing, and saturated materials manufacturing
34K Electromedical, measuring, and control instrument manufacturing	25C Paint, coating, and adhesive manufacturing
35C Electrical equipment manufacturing	27A Nonmetallic mineral product manufacturing
35E Other electrical equipment, appliance, and component manufacturing	32G Other fabricated metal product manufacturing
36C Heavy duty truck manufacturing	33H Ventilation, heating, air-conditioning, and refrigeration equipment manufacturing
36F Aircraft manufacturing, nondefense	35A Electric lighting equipment manufacturing
36K Railroad rolling stock	
36L Ship and boat building, nondefense	INFORMATION TECHNOLOGY INDUSTRIES
37B Office furniture and institutional furniture manufacturing	33G Photographic equipment manufacturing
39A Medical equipment and supplies manufacturing	34A Computer manufacturing
	34B Computer storage device manufacturing
DEFENSE CAPITAL GOODS	34C Other computer peripheral equipment manufacturing
32F Small arms and ordnance manufacturing, defense	34D Communications equipment manufacturing, nondefense
34E Communications equipment manufacturing, defense	34E Communications equipment manufacturing, defense
34J Search and navigation equipment manufacturing, defense	34F Audio and video equipment
36G Aircraft manufacturing, defense	34I Search and navigation equipment, nondefense
36J Missile, space vehicle, and parts manufacturing, defense	34J Search and navigation equipment, defense
36M Ship and boat building, defense	34K Electromedical, measuring, and control instrument manufacturing
	34L Manufacturing and reproducing magnetic and optical media
CONSUMER DURABLE GOODS	35E Other electrical equipment, appliance, and component manufacturing
21A Wood building and mobile home manufacturing	
32B Cutlery and handtool manufacturing	COMPUTERS AND RELATED PRODUCTS
33B Lawn and garden tractors and equipment manufacturing	34A Computer manufacturing
34F Audio and video equipment manufacturing	34B Computer storage device manufacturing
35B Household appliance manufacturing	34C Other computer peripheral equipment manufacturing
36A Automobile manufacturing	
36B Light truck and utility vehicle manufacturing	MOTOR VEHICLES AND PARTS
37A Household furniture and kitchen cabinet manufacturing	36A Automobile manufacturing
37C Other furniture related product manufacturing	36B Light truck and utility vehicle manufacturing
39B Sporting goods, doll, toy, and game manufacturing	36C Heavy duty truck manufacturing
39C Office supplies (except paper) manufacturing	36D Motor vehicle body and trailer manufacturing
39D Other miscellaneous manufacturing	36E Motor vehicle parts manufacturing

Chapter D.

Benchmarking Procedures Used in Revising Monthly M3 Time Series

The mathematical technique used in benchmarking data in the M3 survey generally follows a trend revision minimization approach with constraints determined by annual benchmarks. The objective function F

$$F = \sum_{i=0}^{n-1} [(Y_{i+1}/Y_i) - (X_{i+1}/X_i)]^2$$

defines the sum of squared differences in the month-to-month trend between the original (X values) and revised (Y values) data. In the objective function, the value $i = 0$ corresponds to the link or anchor month. The anchor month's value is not revised by the benchmarking procedure. The value n determines the span of months, beginning with the anchor month, to be considered in the benchmarking procedure. All months within this span, except for the anchor month, are revised based on constraints defined below. Since the count begins with $i = 0$, the last month in the span is represented by $i = n-1$.

For shipments and inventories, the anchor month is December 2000. The value n is 73 and represents the 73-month period ranging from December 2000 to December 2006. For unfilled orders, the anchor month is December 2000. The value n is 73 and represents the 73 months from December 2000 to December 2006. Therefore, when benchmarking,

December 2000 corresponds to $i = 0$ for shipments, inventories, and unfilled orders,

December 2006 corresponds to $i = n-1 = 72$ for shipments and inventories and to $i = n-1 = 72$ for unfilled orders,

Y_{i+1}/Y_i is the revised ratio of change from month i to month $i + 1$, and

X_{i+1}/X_i is the original ratio of change from month i to month $i + 1$.

For shipments, inventories, and unfilled orders, monthly data for the 89 M3 industry categories are benchmarked using the trend minimization function F.

When benchmarking shipments, the constraints are:

$$\sum Y_i = 2001 \text{ ASM benchmark: } i \in 2001$$

$$\sum Y_i = 2002 \text{ Economic Census benchmark: } i \in 2002$$

$$\sum Y_i = 2003 \text{ ASM benchmark: } i \in 2003$$

$$\sum Y_i = 2004 \text{ ASM benchmark: } i \in 2004$$

$$\sum Y_i = 2005 \text{ ASM benchmark: } i \in 2005$$

$$\sum Y_i = 2006 \text{ ASM benchmark: } i \in 2006$$

When benchmarking inventories, the constraints are:

$$Y_{12} = 2002 \text{ Economic Census beginning inventories benchmark: } i \in 2001$$

$$Y_{24} = 2002 \text{ Economic Census ending inventories benchmark: } i \in 2002$$

$$Y_{36} = 2004 \text{ ASM beginning inventories benchmark: } i \in 2003$$

$$Y_{48} = 2005 \text{ ASM beginning inventories benchmark: } i \in 2004$$

$$Y_{60} = 2006 \text{ ASM beginning inventories benchmark: } i \in 2005$$

$$Y_{72} = 2006 \text{ ASM ending inventories benchmark: } i \in 2006$$

When benchmarking unfilled orders, the constraints are:

- Y_{12} = December 2001 unfilled orders benchmark
- Y_{24} = December 2002 unfilled orders benchmark
- Y_{36} = December 2003 unfilled orders benchmark
- Y_{48} = December 2004 unfilled orders benchmark
- Y_{60} = December 2005 unfilled orders benchmark
- Y_{72} = December 2006 unfilled orders benchmark

All benchmarks for unfilled orders are derived since the item is not collected in the ASM or Economic Census. It is derived each year by assuming that the ratio of the benchmark value to the original December unfilled orders value is the same as the ratio of the shipments benchmark value to the sum of the monthly original shipments values.

The three stages of fabrication inventories (finished goods, work in process, and materials and supplies) are benchmarked in similar fashion to total inventories. However, stage of fabrication inventories are tabulated only at three-digit NAICS subsector levels. Therefore, the monthly benchmarked results are summed across industry categories to the subsector level. If, after benchmarking, the sum of the three detail values does not equal the total inventories value for a given month at the subsector level, then the imbalance is eliminated by raking the difference across the stages. The raking is performed by adjusting each original (i.e., benchmarked) detail value by the ratio of total inventories for the month to the sum of the original details.

Monthly new orders estimates are derived consistent with the benchmarked shipments and unfilled orders monthly data using the following formula:

$$X_i = S_i + (Y_i - Y_{i-1})$$

for $i = 1$ through $n-1 = 72$, and where

- $i = 1$ corresponds to January 2001,
- $i = 72$ corresponds to December 2006,
- X_i is benchmarked new orders for month i ,
- S_i is benchmarked shipments for month i , and
- Y_{i-1} is benchmarked unfilled orders for month $i-1$.

Table D-1. **Benchmark Data for Shipments for M3 Industry Categories: 2004–2006**

[Million dollars]

Industry category	Shipments		
	2004	2005	2006
All manufacturing industries	4,308,970	4,742,077	5,019,962
Durable goods industries	2,264,667	2,424,844	2,560,891
Wood products	104,135	112,095	112,404
Wood building and mobile home manufacturing	10,553	11,831	11,293
Other wood product manufacturing	93,582	100,264	101,111
Nonmetallic mineral products	102,880	114,849	126,015
Primary metals	181,602	203,264	232,558
Iron and steel mills and ferroalloy and steel product manufacturing	94,629	103,429	112,922
Alumina, aluminum, and nonferrous metal production and processing	58,834	69,262	86,178
Ferrous metal foundries	16,845	18,812	20,587
Nonferrous metal foundries	11,294	11,761	12,871
Fabricated metal products	261,101	289,433	317,224
Forging and stamping	25,236	28,372	30,910
Cutlery and handtool manufacturing	9,966	10,462	10,608
Boiler, tank, and shipping container manufacturing	23,179	25,371	27,792
Metal valve manufacturing	22,101	24,166	27,236
Small arms and ordnance manufacturing	6,574	6,284	7,536
Other fabricated metal product manufacturing	174,045	194,778	213,142
Machinery	272,123	302,650	326,430
Farm machinery and equipment manufacturing	17,725	20,114	19,802
Lawn and garden tractors and equipment manufacturing	8,023	7,872	7,517
Construction machinery manufacturing	25,029	30,820	35,153
Mining, oil, and gas field machinery manufacturing	8,864	10,698	14,796
Industrial machinery manufacturing	34,141	34,339	38,194
Vending, laundry, and other machinery manufacturing	13,200	13,942	14,691
Photographic equipment manufacturing	7,412	7,642	8,327
Ventilation, heating, air-conditioning, and refrigeration equipment manufacturing	34,374	37,890	39,214
Metalworking machinery manufacturing	24,592	27,065	28,146
Turbine and generator manufacturing	6,255	6,762	6,566
Other power transmission equipment manufacturing	28,893	32,825	35,668
Pump and compressor manufacturing	14,842	17,279	18,954
Material handling equipment manufacturing	18,776	22,304	25,009
All other machinery manufacturing	29,997	33,098	34,393
Computers and electronic products	365,545	372,882	390,776
Computer manufacturing	41,045	40,694	42,508
Computer storage device manufacturing	6,761	8,032	8,400
Other computer peripheral equipment manufacturing	15,464	16,279	16,417
Communications equipment manufacturing	61,369	58,914	70,174
Audio and video equipment manufacturing	10,549	9,969	9,633
Semiconductor and related device manufacturing	72,356	74,597	69,965
Other electronic component manufacturing	43,831	44,781	47,698
Search and navigation equipment manufacturing	39,455	38,020	40,661
Electromedical, measuring, and control instrument manufacturing	66,706	73,965	78,375
Manufacturing and reproducing magnetic and optical media	8,009	7,631	6,945
Electrical equipment, appliances, and components	105,084	111,977	120,040
Electric lighting equipment manufacturing	12,278	12,715	13,024
Household appliance manufacturing	23,989	24,535	24,163
Electrical equipment manufacturing	31,729	34,079	36,916
Battery manufacturing	6,021	6,347	7,070
Other electrical equipment, appliance, and component manufacturing	31,067	34,301	38,867
Transportation equipment	662,000	690,743	698,348
Automobile manufacturing	86,847	88,366	94,229
Light truck and utility vehicle manufacturing	154,769	147,634	138,223
Heavy duty truck manufacturing	20,284	25,844	29,389
Motor vehicle body and trailer manufacturing	30,025	33,536	36,011
Motor vehicle parts manufacturing	202,642	206,106	202,285
Aircraft manufacturing	59,971	64,624	69,101
Aircraft engine and parts manufacturing	45,879	49,437	55,274
Missile, space vehicle, and parts manufacturing	15,132	23,221	18,012
Railroad rolling stock	7,906	10,465	12,082
Ship and boat building	24,005	25,231	26,481
Other transportation equipment	14,540	16,279	17,261

See footnote at end of table.

Table D-1. **Benchmark Data for Shipments for M3 Industry Categories: 2004–2006—Con.**

[Million dollars]

Industry category	Shipments		
	2004	2005	2006
Durable goods industries—Con.			
Furniture and related products	78,280	84,181	86,748
Household furniture and kitchen cabinet manufacturing	40,680	43,531	44,045
Office furniture and institutional furniture manufacturing	28,934	30,842	32,536
Other furniture-related product manufacturing	8,666	9,808	10,167
Miscellaneous products	131,917	142,770	150,348
Medical equipment and supplies manufacturing	66,777	74,223	78,372
Sporting goods, doll, toy, and game manufacturing	15,237	16,074	17,142
Office supplies manufacturing	3,853	3,841	3,722
Other miscellaneous manufacturing	46,050	48,632	51,112
Nondurable goods industries	2,044,303	2,317,233	2,459,071
Food products	512,339	532,403	537,788
Grain and oilseed milling	58,983	57,526	57,667
Dairy product manufacturing	73,446	76,941	75,428
Meat, poultry, and seafood product manufacturing	151,010	159,958	160,426
Other food manufacturing	228,900	237,978	244,267
Beverage and tobacco products	113,737	124,085	124,693
Beverage manufacturing	74,898	81,382	83,096
Tobacco manufacturing	38,839	42,703	41,597
Textile mills	40,898	42,328	38,795
Textile products	33,636	35,022	33,220
Apparel	32,873	31,401	30,462
Leather and allied products	5,812	6,181	6,019
Paper products	155,380	161,928	170,360
Pulp, paper, and paperboard mills	71,625	74,888	79,961
Paperboard container manufacturing	44,507	46,184	48,733
Other paper manufacturing	39,248	40,856	41,666
Printing	93,595	96,922	99,688
Petroleum and coal products	330,439	475,787	548,954
Petroleum refineries	305,331	445,642	514,839
Asphalt paving, roofing, and saturated materials manufacturing	15,666	17,285	20,556
Other petroleum and coal products manufacturing	9,442	12,860	13,559
Chemical Products	540,884	610,873	657,747
Pesticide, fertilizer, and other agricultural chemical manufacturing	24,265	27,304	27,976
Pharmaceutical and medicine manufacturing	157,610	169,226	184,636
Paint, coating and adhesive manufacturing	30,323	32,084	32,911
Other chemical manufacturing	328,686	382,259	412,224
Plastics and rubber products	184,710	200,303	211,345
Tire manufacturing	15,861	16,491	16,852
Other plastics and rubber product manufacturing	168,849	183,812	194,493

Note: Because of independent rounding, detail may not add to total and totals may not add to published ASM totals.

Table D-2. **Benchmark Data for Total Inventories for M3 Industry Categories: 2004–2006**

[Million dollars]

Industry category	Inventories		
	2004	2005	2006
All manufacturing industries	428,960	459,893	497,426
Durable goods industries	257,622	275,650	301,180
Wood products	10,865	11,534	11,813
Wood building and mobile home manufacturing	715	879	783
Other wood product manufacturing	10,150	10,655	11,030
Nonmetallic mineral products	9,738	10,134	11,376
Primary metals	24,198	25,944	30,947
Iron and steel mills and ferroalloy and steel product manufacturing	14,080	14,637	17,195
Alumina, aluminum, and nonferrous metal production and processing	7,223	7,997	10,090
Ferrous metal foundries	1,907	2,225	2,422
Nonferrous metal foundries	988	1,085	1,240
Fabricated metal products	33,297	36,077	40,445
Forging and stamping	3,335	3,578	4,092
Cutlery and handtool manufacturing	1,544	1,602	1,671
Boiler, tank, and shipping container manufacturing	2,562	2,797	3,261
Metal valve manufacturing	3,651	3,875	4,590
Small arms and ordnance manufacturing	1,095	1,045	1,103
Other fabricated metal product manufacturing	21,110	23,180	25,728
Machinery	40,659	43,393	47,922
Farm machinery and equipment manufacturing	2,213	2,295	2,360
Lawn and garden tractors and equipment manufacturing	1,093	1,188	1,116
Construction machinery manufacturing	3,252	3,789	4,698
Mining, oil, and gas field machinery manufacturing	2,234	2,602	3,535
Industrial machinery manufacturing	6,370	6,301	6,736
Vending, laundry, and other machinery manufacturing	1,821	1,778	1,962
Photographic equipment manufacturing	1,127	1,312	1,460
Ventilation, heating, air-conditioning, and refrigeration equipment manufacturing	3,562	3,704	4,186
Metalworking machinery manufacturing	4,171	4,506	4,689
Turbine and generator manufacturing	1,039	983	1,254
Other power transmission equipment manufacturing	3,219	3,631	3,841
Pump and compressor manufacturing	2,541	2,690	3,079
Material handling equipment manufacturing	2,348	2,519	2,793
All other machinery manufacturing	5,669	6,095	6,213
Computers and electronic products	37,751	43,655	44,092
Computer manufacturing	1,411	1,593	1,499
Computer storage device manufacturing	784	1,053	1,203
Other computer peripheral equipment manufacturing	1,937	1,824	1,919
Communications equipment manufacturing	7,173	10,537	8,817
Audio and video equipment manufacturing	798	878	891
Semiconductor and related device manufacturing	5,041	5,440	5,295
Other electronic component manufacturing	5,969	5,935	6,554
Search and navigation equipment manufacturing	4,917	6,011	6,677
Electromedical, measuring, and control instrument manufacturing	9,298	9,976	10,804
Manufacturing and reproducing magnetic and optical media	423	408	433
Electrical equipment, appliances, and components	11,895	12,330	13,944
Electric lighting equipment manufacturing	1,465	1,525	1,678
Household appliance manufacturing	1,727	1,556	1,669
Electrical equipment manufacturing	3,971	4,239	4,889
Battery manufacturing	491	520	653
Other electrical equipment, appliance, and component manufacturing	4,241	4,490	5,055
Transportation equipment	63,276	64,798	71,018
Automobile manufacturing	1,777	2,020	2,212
Light truck and utility vehicle manufacturing	2,422	2,709	3,034
Heavy duty truck manufacturing	1,205	1,373	1,415
Motor vehicle body and trailer manufacturing	3,577	3,849	4,229
Motor vehicle parts manufacturing	13,031	13,133	13,690
Aircraft manufacturing	21,665	24,811	27,030
Aircraft engine and parts manufacturing	8,387	8,638	9,962
Missile, space vehicle, and parts manufacturing	5,366	1,992	2,290
Railroad rolling stock	1,572	1,693	1,953
Ship and boat building	2,727	2,746	3,106
Other transportation equipment	1,547	1,834	2,097

See footnote at end of table.

Table D-2. **Benchmark Data for Total Inventories for M3 Industry Categories: 2004–2006—Con.**

[Million dollars]

Industry category	Inventories		
	2004	2005	2006
Durable goods industries—Con.			
Furniture and related products	7,819	8,123	8,214
Household furniture and kitchen cabinet manufacturing	4,652	4,771	4,707
Office furniture and institutional furniture manufacturing	2,569	2,719	2,876
Other furniture-related product manufacturing	598	633	631
Miscellaneous products	18,124	19,662	21,409
Medical equipment and supplies manufacturing	8,457	9,116	10,338
Sporting goods, doll, toy, and game manufacturing	2,512	2,795	2,908
Office supplies manufacturing	498	514	516
Other miscellaneous manufacturing	6,657	7,237	7,647
Nondurable goods industries	171,338	184,243	196,246
Food products	32,123	33,007	34,881
Grain and oilseed milling	3,468	3,658	4,304
Dairy product manufacturing	3,720	3,870	4,006
Meat, poultry, and seafood product manufacturing	5,666	6,311	6,593
Other food manufacturing	19,269	19,168	19,978
Beverage and tobacco products	15,445	14,481	14,714
Beverage manufacturing	10,563	9,980	10,399
Tobacco manufacturing	4,882	4,501	4,315
Textile mills	4,193	4,066	3,960
Textile products	3,258	3,302	3,378
Apparel	4,158	3,864	3,935
Leather and allied products	841	867	1,024
Paper products	14,145	14,219	14,906
Pulp, paper, and paperboard mills	6,333	6,491	6,708
Paperboard container manufacturing	4,024	3,862	4,193
Other paper manufacturing	3,788	3,866	4,005
Printing	5,851	5,957	6,312
Petroleum and coal products	19,807	27,433	29,481
Petroleum refineries	17,840	25,370	26,982
Asphalt paving, roofing, and saturated materials manufacturing	1,040	1,092	1,338
Other petroleum and coal products manufacturing	927	971	1,161
Chemical products	54,024	58,189	63,357
Pesticide, fertilizer, and other agricultural chemical manufacturing	2,277	2,734	2,834
Pharmaceutical and medicine manufacturing	19,920	20,500	22,720
Paint, coating, and adhesive manufacturing	2,624	2,731	2,876
Other chemical manufacturing	29,203	32,224	34,927
Plastics and rubber products	17,493	18,858	20,298
Tire manufacturing	1,247	1,322	1,351
Other plastics and rubber product manufacturing	16,246	17,536	18,947

Note: Because of independent rounding, detail may not add to total and totals may not add to published ASM totals. For benchmarking constraint purposes, the ending year inventories for years 2004 and 2005 are represented by beginning year inventories from 2005 and 2006, respectively; see page D-1 for details.

Table D-3. **Benchmark Data for Inventories by Stage of Fabrication for M3 Industry Categories: 2004-2006**

[Million dollars]

Industry category	2004	2005	2006
ALL MANUFACTURING INDUSTRIES			
Materials and supplies	152,641	163,163	176,896
Work-in-process	116,803	126,993	136,370
Finished goods	159,516	169,737	184,160
Durable Goods Industries			
Materials and supplies	91,733	97,792	108,251
Work-in-process	87,657	95,135	101,298
Finished goods	78,232	82,723	91,631
Wood Products			
Materials and supplies	4,640	4,931	5,013
Work-in-process	2,142	2,175	2,135
Finished goods	4,083	4,428	4,665
Nonmetallic Mineral Products			
Materials and supplies	3,696	3,907	4,393
Work-in-process	1,084	1,070	1,221
Finished goods	4,958	5,157	5,762
Primary Metals			
Materials and supplies	9,464	9,837	12,165
Work-in-process	7,110	7,921	9,496
Finished goods	7,624	8,186	9,286
Fabricated Metal Products			
Materials and supplies	12,521	13,964	15,583
Work-in-process	8,972	9,796	11,306
Finished goods	11,804	12,317	13,556
Machinery			
Materials and supplies	15,039	16,422	18,339
Work-in-process	11,459	12,200	13,140
Finished goods	14,161	14,771	16,443
Computers and Electronic Products			
Materials and supplies	15,073	15,121	16,239
Work-in-process	14,096	19,574	18,130
Finished goods	8,582	8,960	9,723
Electrical Equipment, Appliances, and Components			
Materials and supplies	5,005	5,367	5,752
Work-in-process	2,485	2,499	2,928
Finished goods	4,405	4,464	5,264
Transportation Equipment			
Materials and supplies	16,712	17,957	19,919
Work-in-process	35,836	35,306	38,129
Finished goods	10,728	11,535	12,970
Furniture and Related Products			
Materials and supplies	3,397	3,561	3,676
Work-in-process	1,493	1,496	1,490
Finished goods	2,929	3,066	3,048
Miscellaneous Products			
Materials and supplies	6,186	6,725	7,172
Work-in-process	2,980	3,098	3,323
Finished goods	8,958	9,839	10,914
Nondurable Goods Industries			
Materials and supplies	60,908	65,371	68,645
Work-in-process	29,146	31,858	35,072
Finished goods	81,284	87,014	92,529
Food Products			
Materials and supplies	11,344	11,874	12,816
Work-in-process	2,913	2,951	3,223
Finished goods	17,866	18,182	18,842

See footnote at end of table.

Table D-3. **Benchmark Data for Inventories by Stage of Fabrication for M3 Industry Categories: 2004-2006—Con.**

[Million dollars]

Industry category	2004	2005	2006
ALL MANUFACTURING INDUSTRIES—Con.			
Nondurable Goods Industries—Con.			
Beverage and Tobacco Products			
Materials and supplies	5,359	4,842	4,862
Work-in-process	4,541	4,684	4,814
Finished goods	5,545	4,955	5,038
Textile Mills			
Materials and supplies	1,279	1,269	1,240
Work-in-process	1,111	1,082	1,056
Finished goods	1,803	1,715	1,664
Textile Products			
Materials and supplies	1,251	1,263	1,273
Work-in-process	539	559	522
Finished goods	1,468	1,480	1,583
Apparel			
Materials and supplies	1,150	1,053	1,049
Work-in-process	707	656	647
Finished goods	2,301	2,155	2,239
Leather and Allied Products			
Materials and supplies	297	299	352
Work-in-process	115	109	103
Finished goods	429	459	569
Paper Products			
Materials and supplies	6,784	6,826	7,172
Work-in-process	1,156	1,193	1,345
Finished goods	6,205	6,200	6,389
Printing			
Materials and supplies	2,771	2,793	2,961
Work-in-process	1,449	1,469	1,541
Finished goods	1,631	1,695	1,810
Petroleum and Coal Products			
Materials and supplies	6,837	9,721	9,512
Work-in-process	3,825	5,669	6,749
Finished goods	9,145	12,043	13,220
Chemical Products			
Materials and supplies	16,760	17,639	19,134
Work-in-process	10,808	11,363	12,825
Finished goods	26,456	29,187	31,398
Plastics and Rubber Products			
Materials and supplies	7,076	7,792	8,274
Work-in-process	1,982	2,123	2,247
Finished goods	8,435	8,943	9,777

Note: Because of independent rounding, detail may not add to total and totals may not add to published ASM totals.

Table D-4. **Total Shipments as Originally Published and as Revised: 2004–2007**

[Million dollars]

Industry category	2004	2005	2006	2007
ALL MANUFACTURING INDUSTRIES				
As published	4,308,970	4,735,385	4,939,953	4,994,808
As revised	4,308,970	4,742,077	5,019,962	5,081,075
Durable Goods Industries				
As published	2,264,667	2,420,344	2,537,908	2,546,671
As revised	2,264,667	2,424,844	2,560,891	2,562,863
Wood Products				
As published	104,135	112,017	104,970	94,146
As revised	104,135	112,095	112,404	101,967
Nonmetallic Mineral Products				
As published	102,880	114,321	120,851	114,482
As revised	102,880	114,849	126,015	119,189
Primary Metals				
As published	181,602	201,835	232,809	241,445
As revised	181,602	203,264	232,558	241,511
Fabricated Metal Products				
As published	261,101	288,068	305,268	311,907
As revised	261,101	289,433	317,224	326,685
Machinery				
As published	272,123	302,202	327,886	332,195
As revised	272,123	302,650	326,430	331,451
Computers and Electronic Products				
As published	365,545	373,932	393,953	397,975
As revised	365,545	372,882	390,776	386,897
Electrical Equipment, Appliances, and Components				
As published	105,084	112,007	122,693	129,613
As revised	105,084	111,977	120,040	126,995
Transportation Equipment				
As published	662,000	687,289	690,493	687,070
As revised	662,000	690,743	698,348	693,036
Furniture and Related Products				
As published	78,280	84,291	87,208	82,879
As revised	78,280	84,181	86,748	82,266
Miscellaneous Products				
As published	131,917	144,382	151,777	154,959
As revised	131,917	142,770	150,348	152,866
Nondurable Goods Industries				
As published	2,044,303	2,315,041	2,402,045	2,448,137
As revised	2,044,303	2,317,233	2,459,071	2,518,212
Food Products				
As published	512,339	534,879	537,879	571,150
As revised	512,339	532,403	537,788	573,563
Beverage and Tobacco Products				
As published	113,737	123,636	128,639	135,490
As revised	113,737	124,085	124,693	132,251
Textile Mills				
As published	40,898	41,149	37,295	34,901
As revised	40,898	42,328	38,795	36,587
Textile Products				
As published	33,636	36,706	36,614	33,523
As revised	33,636	35,022	33,220	30,487

See footnote at end of table.

Table D-4. **Total Shipments as Originally Published and as Revised: 2004–2007—Con.**

[Million dollars]

Industry category	2004	2005	2006	2007
ALL MANUFACTURING INDUSTRIES—Con.				
Nondurable Goods Industries—Con.				
Apparel				
As published	32,873	31,650	32,712	32,612
As revised	32,873	31,401	30,462	29,814
Leather and Allied Products				
As published	5,812	6,013	6,366	6,692
As revised	5,812	6,181	6,019	6,299
Paper Products				
As published	155,380	162,848	168,602	166,437
As revised	155,380	161,928	170,360	168,500
Printing				
As published	93,595	97,095	101,015	102,150
As revised	93,595	96,922	99,688	101,806
Petroleum and Coal Products				
As published	330,439	476,075	514,901	525,393
As revised	330,439	475,787	548,954	564,114
Chemical Products				
As published	540,884	604,501	630,363	633,317
As revised	540,884	610,873	657,747	664,057
Plastics and Rubber Products				
As published	184,710	200,489	207,659	206,472
As revised	184,710	200,303	211,345	210,734

Note: Because of independent rounding, detail may not add to total and totals may not add to published ASM totals.

Table D-5. **Total Inventories as Originally Published and as Revised: 2004–2007**

[Million dollars]

Industry category	2004	2005	2006	2007
ALL MANUFACTURING INDUSTRIES				
As published	428,321	466,171	496,115	514,222
As revised	428,960	459,893	497,426	515,952
Durable Goods Industries				
As published	258,736	278,602	300,664	311,268
As revised	257,622	275,650	301,180	311,601
Wood Products				
As published	10,836	11,829	10,872	10,273
As revised	10,865	11,534	11,813	11,106
Nonmetallic Mineral Products				
As published	9,726	10,373	11,737	11,914
As revised	9,738	10,134	11,376	11,582
Primary Metals				
As published	24,563	26,437	31,412	30,718
As revised	24,198	25,944	30,947	30,577
Fabricated Metal Products				
As published	33,090	36,358	40,464	41,325
As revised	33,297	36,077	40,445	41,384
Machinery				
As published	40,071	44,065	47,940	50,492
As revised	40,659	43,393	47,922	50,487
Computers and Electronic Products				
As published	41,597	38,819	42,882	42,795
As revised	37,751	43,655	44,092	43,788
Electrical Equipment, Appliances, and Components				
As published	11,897	12,413	14,044	14,512
As revised	11,895	12,330	13,944	14,391
Transportation Equipment				
As published	60,745	69,721	71,303	78,721
As revised	63,276	64,798	71,018	78,177
Furniture and Related Products				
As published	7,912	8,321	8,612	8,239
As revised	7,819	8,123	8,214	7,847
Miscellaneous Products				
As published	18,299	20,266	21,398	22,279
As revised	18,124	19,662	21,409	22,262
Nondurable Goods Industries				
As published	169,585	187,569	195,451	202,954
As revised	171,338	184,243	196,246	204,351
Food Products				
As published	31,776	33,494	35,711	37,169
As revised	32,123	33,007	34,881	36,436
Beverage and Tobacco Products				
As published	15,234	14,598	14,520	14,571
As revised	15,445	14,481	14,714	14,899
Textile Mills				
As published	4,139	4,190	3,939	3,775
As revised	4,193	4,066	3,960	3,729
Textile Products				
As published	3,256	3,557	3,494	3,357
As revised	3,258	3,302	3,378	3,239

See footnote at end of table.

Table D-5. **Total Inventories as Originally Published and as Revised: 2004–2007—Con.**

[Million dollars]

Industry category	2004	2005	2006	2007
ALL MANUFACTURING INDUSTRIES—Con.				
Nondurable Goods Industries—Con.				
Apparel				
As published	4,333	4,079	3,715	3,740
As revised	4,158	3,864	3,935	4,220
Leather and Allied Products				
As published	777	864	861	844
As revised	841	867	1,024	992
Paper Products				
As published	14,237	14,781	15,239	15,603
As revised	14,145	14,219	14,906	15,221
Printing				
As published	5,781	6,128	6,250	6,351
As revised	5,851	5,957	6,312	6,631
Petroleum and Coal Products				
As published	19,431	27,783	30,844	34,567
As revised	19,807	27,433	29,481	33,008
Chemical Products				
As published	53,210	58,935	61,071	62,104
As revised	54,024	58,189	63,357	64,505
Plastics and Rubber Products				
As published	17,411	19,160	19,807	20,873
As revised	17,493	18,858	20,298	21,471

Note: Because of independent rounding, detail may not add to total and totals may not add to published ASM totals.

Table D-6. **End-of-Year Unfilled Orders as Originally Published and as Revised: 2004–2007**

[Million dollars]

Industry category	2004	2005	2006	2007
ALL MANUFACTURING INDUSTRIES¹				
As published	492,344	567,405	681,842	807,753
As revised	493,022	570,355	657,878	771,816
Primary Metals				
As published	22,003	26,240	26,692	27,040
As revised	22,004	26,447	26,945	27,263
Fabricated Metal Products				
As published	40,497	48,128	53,125	57,879
As revised	40,570	48,389	55,249	59,419
Machinery				
As published	52,334	62,271	76,888	89,282
As revised	52,973	63,208	78,384	90,387
Computers and Electronic Products¹				
As published	100,132	97,090	110,192	117,774
As revised	100,126	98,602	114,753	121,767
Electrical Equipment, Appliances, and Components				
As published	15,139	17,639	21,736	23,024
As revised	15,226	17,839	21,850	23,064
Transportation Equipment				
As published	249,333	303,953	380,998	479,370
As revised	249,225	303,884	348,439	436,795
Furniture and Related Products				
As published	6,922	7,200	6,788	7,000
As revised	6,921	7,142	6,667	6,764

¹Data on unfilled orders are not available for the semiconductor industry.

Note: Because of independent rounding, detail may not add to total and totals may not add to published ASM totals.

Table D-7. **Annual New Orders as Originally Published and as Revised: 2004–2007**

[Million dollars]

Industry category	2004	2005	2006	2007
ALL MANUFACTURING INDUSTRIES¹				
As published	4,255,188	4,734,955	4,974,738	5,043,886
As revised	4,255,431	4,744,813	5,037,520	5,131,164
Durable Goods Industries				
As published	2,210,885	2,419,914	2,572,693	2,595,749
As revised	2,211,128	2,427,580	2,578,449	2,612,952
Primary Metals				
As published	185,893	206,072	233,261	241,793
As revised	185,893	207,707	233,056	241,829
Fabricated Metal Products				
As published	265,864	295,699	310,265	316,661
As revised	265,932	297,252	324,084	330,855
Machinery				
As published	273,909	312,139	342,503	344,589
As revised	274,091	312,885	341,606	343,454
Computers and Electronic Products¹				
As published	297,237	295,399	327,403	328,724
As revised	297,239	296,761	336,962	330,062
Electrical Equipment, Appliances, and Components				
As published	106,517	114,507	126,790	130,901
As revised	106,521	114,590	124,051	128,209
Transportation Equipment				
As published	663,460	741,909	767,538	785,442
As revised	663,443	745,402	742,903	781,392
Furniture and Related Products				
As published	78,879	84,569	86,796	83,091
As revised	78,883	84,402	86,273	82,363

¹Data on new orders are not available for the semiconductor industry.

Note: Because of independent rounding, detail may not add to total and totals may not add to published ASM totals.

Chapter E.

Notes on Trading Day Adjustment Methodology

The shipments data in the M3 survey are adjusted for calendar month variations, both length of month and number of trading days per month. The selection of these adjustment factors is based primarily on recognition of patterns contained in the data using the regression and spectral analysis capabilities of the X-12 seasonal adjustment software.

Factors are considered optimal when the daily weights assigned to the industry eliminate or diminish the peaks in the spectral plots, which are based on calendar frequencies, and lower the absolute value of the month-to-month change in the residual irregular component (\bar{I}) of the data series.

New orders data in this publication are implicitly trading day adjusted by using the trading day adjusted shipments as input to their derivation. The change in unfilled orders is not trading day adjusted.

Table E-1. **Trading Day Diagnostics**

Industry	Chi-square ¹	Industry	Chi-square ¹
Food Products		Machinery	
Grain and oilseed milling	59.06	Farm machinery and equipment	23.94
Dairy products	22.64	Lawn and garden tractors and equipment	9.76
Meat, poultry, and seafood products	22.26	Construction machinery	44.71
Other foods	12.26	Mining, oil, and gas field machinery	24.80
Beverages and Tobacco		Industrial machinery	19.05
Beverages	25.85	Vending, laundry, and other machinery	19.81
Tobacco	(NA)	Photographic equipment	18.57
Textile Mills	15.64	Ventilation, heating, air-conditioning, and refrigeration equipment	22.08
Textile Products	18.20	Metalworking machinery	3.03
Apparel	9.28	Turbines and generators	(NA)
Leather and Allied Products	9.01	Other power transmission equipment	9.59
Wood Products		Pumps and compressors	7.68
Wood buildings and mobile homes	6.27	Material handling equipment	39.87
Other wood products	28.02	All other machinery	22.00
Paper Products		Computers and Electronic Products	
Pulp, paper, and paperboard	81.60	Computers	12.01
Paperboard containers	155.80	Computer storage devices	19.33
Other paper	20.02	Other computer peripheral equipment	21.87
Printing	9.53	Communications equipment, nondefense	24.18
Petroleum and Coal Products		Communications equipment, defense	8.91
Petroleum refineries	21.84	Audio and video equipment	10.42
Asphalt paving, roofing, and saturated materials	39.05	Semiconductors and related devices	19.46
Other petroleum and coal products	52.68	Other electronic components	18.79
Chemical Products		Search and navigation equipment, nondefense	10.89
Pesticides, fertilizers, and other agricultural chemicals	39.62	Search and navigation equipment, defense	9.66
Pharmaceuticals and medicines	27.37	Electromedical, measuring, and control instruments	15.62
Paints, coatings, and adhesives	69.07	Magnetic and optical media	6.97
Other chemicals	121.19	Electrical Equipment, Appliances, and Components	
Plastics and Rubber Products		Electric lighting equipment	15.81
Tires	41.22	Household appliances	33.88
Other plastics and rubber products	112.53	Electrical equipment	5.10
Nonmetallic Mineral Products	189.90	Batteries	18.32
Primary Metals		Other electrical equipment, appliances, and components	14.93
Iron and steel mills and ferroalloy and steel products	101.48	Transportation Equipment	
Alumina, aluminum, and nonferrous metal products	42.22	Automobiles	46.26
Ferrous metal foundries	71.75	Light trucks and utility vehicles	34.43
Nonferrous metal foundries	18.03	Heavy duty trucks	34.17
Fabricated Metal Products		Motor vehicle bodies and trailers	27.04
Forging and stamping	37.40	Motor vehicle parts	69.66
Cutlery and hand tools	16.09	Aircraft, nondefense	11.99
Boilers, tanks, and shipping containers	38.07	Aircraft, defense	13.10
Metal valves	11.27	Aircraft engines and parts, nondefense	21.45
Small arms and ordnance, nondefense	13.48	Aircraft engines and parts, defense	16.56
Small arms and ordnance, defense	27.24	Missiles, space vehicles, and parts, defense	3.06
Other fabricated metal products	122.01	Railroad rolling stock	3.20
		Ships and boats, nondefense	12.38
		Ships and boats, defense	6.92
		Other transportation equipment	14.50
		Furniture and Related Products	
		Household furniture and kitchen cabinets	20.54
		Office furniture and institutional furniture	13.13
		Other furniture-related products	23.86
		Miscellaneous Products	
		Medical equipment and supplies	111.15
		Sporting goods, dolls, toys, and games	18.97
		Office supplies	11.84
		Other miscellaneous products	48.47

NA Not available.

¹The chi-square value measures the presence of identifiable trading day patterns.

Note: For all industry categories including those that are not trading-day adjusted, we adjust for leap-year effects and for length of month.

Chapter F.

Summary Measures for Evaluating the Quality of the Seasonal Adjustment of M3 Series

The measures shown in the following tables were used in evaluating the current seasonal adjustment procedure. Brief descriptions of the measures follow.

The " \bar{O} " is the average month-to-month percentage change, without regard to sign, in the original series. The " \bar{C}_I " is the same for the seasonally adjusted series. The " \bar{I} " is the same for the irregular component, which is obtained by dividing the trend-cycle component into the seasonally adjusted series. The " \bar{C} " is the same for the trend-cycle component which is a smoothed version of the seasonally adjusted series obtained by means of a moving average.

The " \bar{I}/\bar{C} " is the average relative month-to-month change, without regard to sign, of the irregular component divided by the average relative month-to-month change, without regard to sign, of the trend-cycle component. It serves as an indication of the series' relative irregularity.

The M7 value is a function of the F-test assessing the significance of moving seasonality and the F-test assessing the significance of stable seasonality. A value between 0 and 1 is an indicator that the amount of moving seasonality is acceptable relative to the amount of stable seasonality.

The F value presented here measures the presence of stable seasonality. It is the quotient of two variances: (1) the between months variance, which is mainly due to seasonal, and (2) the residual variance, which is mainly due to irregular. A value of 7.0 or greater is used as an indicator of the presence of stable seasonality.

The Q value is a weighted average of 11 different quality control statistics from X-12-ARIMA. It is an indicator of the overall quality of the adjustment. With values greater than 1.0, other measures must be examined to determine if the seasonal movement in the series can be adequately quantified by the X-12 program.

For series which are not seasonally adjusted in this publication, the original unadjusted values are included in both the seasonally adjusted and unadjusted totals.

Table F-1. **Shipments (Seasonal Summary Measures)**

Industry	Average percent changes				Ratio of irregular to trend cycle (\bar{T}/\bar{C})	Ratio of moving to stable seasonality (M7)	F-value	Q-value	Seasonal adjustment indicator
	Original series (\bar{O})	Seasonally adjusted series (\bar{C})	Irregular series (\bar{T})	Trend-cycle series (\bar{C})					
Food Products									
Grain and oilseed milling	4.71	2.16	1.95	0.64	3.06	0.40	27.90	0.51	(S)
Dairy products	4.83	1.58	1.38	0.68	2.05	0.30	52.75	0.58	(S)
Meat, poultry, and seafood products	3.38	1.24	1.12	0.49	2.28	0.31	64.90	0.51	(S)
Other foods	5.70	1.40	1.31	0.33	4.01	0.21	172.02	0.42	(S)
Beverages and Tobacco									
Beverages	5.33	1.69	1.62	0.39	4.13	0.16	255.12	0.33	(S)
Tobacco	12.12	7.70	7.65	0.66	11.57	2.26	4.67	1.67	(NS)
Textile Mills	8.36	1.78	1.66	0.57	2.91	0.22	144.39	0.37	(S)
Textile Products	6.15	1.70	1.55	0.66	2.34	0.19	185.15	0.28	(S)
Apparel	8.31	2.15	1.94	0.67	2.89	0.22	143.26	0.38	(S)
Leather and Allied Products	9.64	3.46	3.28	0.79	4.13	0.52	31.50	0.65	(S)
Wood Products									
Wood buildings and mobile homes	7.14	2.88	2.53	1.22	2.07	0.16	196.85	0.21	(S)
Other wood products	5.25	2.26	1.87	0.90	2.08	0.28	113.82	0.38	(S)
Paper Products									
Pulp, paper, and paperboard	3.29	1.60	1.36	0.84	1.62	0.43	24.02	0.49	(S)
Paperboard containers	4.05	1.52	1.34	0.65	2.06	0.26	62.04	0.44	(S)
Other paper	4.57	1.90	1.78	0.52	3.40	0.44	25.99	1.07	(S)
Printing	4.50	1.20	1.13	0.36	3.13	0.18	130.96	0.38	(S)
Petroleum and Coal Products									
Petroleum refineries	4.51	3.13	2.41	1.75	1.38	0.31	53.46	0.39	(S)
Asphalt paving, roofing, and saturated materials	14.13	3.69	3.27	1.29	2.53	0.09	743.15	0.34	(S)
Other petroleum and coal products	6.30	3.75	3.52	1.29	2.74	0.70	10.09	0.96	(S)
Chemical Products									
Pesticides, fertilizers, and other agricultural chemicals	14.71	4.64	4.16	1.31	3.18	0.16	349.24	0.38	(S)
Pharmaceuticals and medicines	7.07	2.79	2.63	0.73	3.62	0.51	17.54	0.89	(S)
Paints, coatings, and adhesives	5.45	2.17	2.03	0.63	3.24	0.17	221.92	0.42	(S)
Other chemicals	4.73	1.34	1.08	0.72	1.50	0.21	101.00	0.30	(S)
Plastics and Rubber Products									
Tires	7.00	2.29	2.22	0.36	6.21	0.29	68.04	0.75	(S)
Other plastics and rubber products	5.62	1.30	1.17	0.47	2.46	0.15	172.29	0.26	(S)
Nonmetallic Mineral Products	5.87	1.46	1.27	0.65	1.94	0.14	286.81	0.22	(S)
Primary Metals									
Iron and steel mills and ferroalloy and steel products	6.06	1.86	1.27	1.17	1.08	0.17	158.22	0.19	(S)
Alumina, aluminum, and nonferrous metal products	5.11	2.07	1.74	0.98	1.78	0.35	48.70	0.41	(S)
Ferrous metal foundries	9.18	2.06	1.82	0.69	2.64	0.22	127.22	0.32	(S)
Nonferrous metal foundries	11.45	3.12	2.80	1.09	2.57	0.16	183.93	0.28	(S)
Fabricated Metal Products									
Forging and stamping	6.42	1.80	1.61	0.80	2.00	0.20	107.77	0.32	(S)
Cutlery and handtools	10.14	3.63	3.55	0.50	7.07	0.37	51.53	0.75	(S)
Boilers, tanks, and shipping containers	6.25	2.61	2.55	0.32	7.87	0.23	100.09	0.78	(S)
Metal valves	6.45	2.79	2.67	0.69	3.89	0.31	72.79	0.44	(S)
Small arms and ordnance, nondefense	10.63	5.30	5.03	1.18	4.27	0.42	36.76	0.56	(S)
Small arms and ordnance, defense	20.98	7.83	7.64	1.12	6.81	0.49	37.61	0.88	(S)
Other fabricated metal products	5.88	1.20	0.97	0.63	1.54	0.16	176.21	0.18	(S)
Machinery									
Farm machinery and equipment	12.28	4.58	3.97	1.66	2.39	0.20	113.45	0.29	(S)
Lawn and garden tractors and equipment	23.58	6.89	6.80	0.70	9.64	0.14	314.12	0.63	(S)
Construction machinery	9.09	3.32	2.84	1.34	2.13	0.24	94.26	0.30	(S)
Mining, oil, and gas field machinery	8.83	3.45	3.23	1.18	2.73	0.45	37.08	0.63	(S)
Industrial machinery	17.50	5.91	5.51	1.75	3.14	0.37	54.78	0.56	(S)
Vending, laundry, and other machinery	14.95	6.32	6.27	0.51	12.38	0.90	20.77	1.47	(S)
Photographic equipment	10.83	3.50	3.19	1.26	2.53	0.23	83.32	0.39	(S)
Ventilation, heating, air-conditioning, and refrigeration equipment	9.31	2.33	2.14	0.72	2.97	0.24	97.95	0.34	(S)
Metalworking machinery	14.87	4.12	3.96	0.95	4.18	0.34	62.18	0.58	(NS)
Turbines and generators	66.86	18.90	18.72	1.61	11.60	0.49	45.52	1.25	(NS)
Other power transmission equipment	8.51	3.11	2.89	0.91	3.19	0.24	84.53	0.45	(S)
Pumps and compressors	7.29	2.37	2.22	0.65	3.42	0.28	83.23	0.52	(S)
Material handling equipment	7.95	3.25	3.02	1.03	2.92	0.39	33.17	0.67	(S)
All other machinery	5.57	2.59	2.56	0.41	6.27	0.45	34.97	0.69	(S)

See footnotes at end of table.

Table F-1. **Shipments (Seasonal Summary Measures)**—Con.

Industry	Average percent changes				Ratio of irregular to trend cycle (\bar{T}/\bar{C})	Ratio of moving to stable seasonality (M7)	F-value	Q-value	Seasonal adjustment indicator
	Original series (\bar{O})	Seasonally adjusted series (\bar{C})	Irregular series (\bar{T})	Trend-cycle series (\bar{C})					
Computers and Electronic Products									
Computers	22.90	5.24	5.07	1.26	4.03	0.58	38.87	0.75	(S)
Computer storage devices	62.06	6.61	6.31	1.52	4.15	0.22	326.63	0.57	(S)
Other computer peripheral equipment	33.74	6.25	6.12	0.93	6.59	0.23	188.79	0.60	(S)
Communications equipment, nondefense	22.30	3.52	3.22	1.28	2.51	0.14	318.18	0.28	(S)
Communications equipment, defense	15.33	9.35	9.28	0.96	9.63	0.82	12.53	1.24	(S)
Audio and video equipment	11.59	4.06	3.66	1.36	2.70	0.26	63.35	0.42	(S)
Semiconductors and related devices	12.01	5.83	5.40	1.49	3.62	0.60	21.13	0.68	(S)
Other electronic components	9.36	2.33	2.18	0.78	2.79	0.34	52.59	0.52	(S)
Search and navigation equipment, nondefense	12.95	5.37	5.24	0.91	5.78	0.36	50.45	0.91	(S)
Search and navigation equipment, defense	11.50	3.56	3.40	0.77	4.40	0.38	56.91	0.74	(S)
Electromedical, measuring, and control instruments	19.23	2.12	1.99	0.57	3.52	0.56	127.98	0.57	(S)
Magnetic and optical media	10.05	4.83	4.49	1.39	3.22	0.27	62.13	0.53	(S)
Electrical Equipment, Appliances, and Components									
Electric lighting equipment	13.14	2.88	2.83	0.46	6.18	0.30	91.38	0.66	(S)
Household appliances	10.51	2.70	2.53	0.62	4.06	0.27	75.72	0.55	(S)
Electrical equipment	12.18	2.46	2.32	0.60	3.87	0.28	97.26	0.53	(S)
Batteries	14.35	4.29	4.20	0.61	6.87	0.21	126.68	0.64	(S)
Other electrical equipment, appliances, and components	7.00	2.05	1.90	0.70	2.71	0.24	74.80	0.40	(S)
Transportation Equipment									
Automobiles	17.67	4.15	3.92	0.99	3.97	0.17	157.94	0.38	(S)
Light trucks and utility vehicles	19.37	4.94	4.62	1.37	3.37	0.22	97.47	0.38	(S)
Heavy duty trucks	8.84	4.37	3.74	1.96	1.91	0.33	44.36	0.37	(S)
Motor vehicle bodies and trailers	9.02	3.91	3.64	1.10	3.32	0.28	56.55	0.46	(S)
Motor vehicle parts	13.24	2.74	2.54	0.72	3.51	0.14	261.69	0.32	(S)
Aircraft, nondefense	31.33	14.77	14.66	1.54	9.49	0.39	40.82	1.18	(S)
Aircraft, defense	13.78	7.73	7.71	0.96	8.00	0.56	23.49	1.13	(S)
Aircraft engines and parts, nondefense	18.20	5.85	5.56	1.28	4.33	0.43	39.31	0.75	(S)
Aircraft engines and parts, defense	23.96	10.83	10.74	1.08	9.95	0.35	47.20	1.14	(S)
Missiles, space vehicles, and parts, defense	11.95	6.23	5.95	1.78	3.35	0.52	27.95	0.78	(S)
Railroad rolling stock	28.55	11.95	11.81	1.36	8.67	0.42	40.78	1.16	(S)
Ships and boats, nondefense	13.96	6.59	6.52	0.67	9.67	0.44	34.32	1.12	(S)
Ships and boats, defense	12.67	7.34	7.31	0.69	10.67	0.52	18.01	1.39	(S)
Other transportation equipment	13.39	5.71	5.35	1.58	3.40	0.38	31.08	0.57	(S)
Furniture and Related Products									
Household furniture and kitchen cabinets	7.41	1.69	1.55	0.55	2.81	0.36	99.54	0.37	(S)
Office furniture and institutional furniture	4.34	2.33	2.17	0.65	3.34	0.32	64.02	0.48	(S)
Other furniture-related products	4.79	2.25	2.01	0.76	2.64	0.37	50.73	0.46	(S)
Miscellaneous Products									
Medical equipment and supplies	6.96	1.59	1.46	0.58	2.53	0.25	94.15	0.50	(S)
Sporting goods, dolls, toys, and games	17.99	3.37	3.19	0.80	4.00	0.31	80.22	0.49	(S)
Office supplies	16.68	4.91	4.84	0.53	9.12	0.33	88.21	0.80	(S)
Other miscellaneous products	8.98	2.09	1.95	0.66	2.97	0.33	76.43	0.39	(S)

NS Not seasonally adjusted. S Seasonally adjusted.

Table F-2. **Unfilled Orders (Seasonal Summary Measures)**

Industry	Average percent changes				Ratio of irregular to trend cycle (\bar{T}/\bar{C})	Ratio of moving to stable seasonality (M7)	F-value	Q-value	Seasonal adjustment indicator
	Original series (\bar{O})	Seasonally adjusted series (\bar{C})	Irregular series (\bar{T})	Trend-cycle series (\bar{C})					
Primary Metals									
Iron and steel mills and ferroalloy and steel products	3.09	2.23	1.11	1.75	0.63	0.44	62.61	0.34	(S)
Alumina, aluminum, and nonferrous metal products	2.54	1.74	0.96	1.39	0.69	0.35	92.55	0.30	(S)
Ferrous metal foundries	2.14	1.79	1.49	0.92	1.62	0.29	46.32	0.38	(S)
Nonferrous metal foundries	3.48	2.94	2.56	1.34	1.92	0.44	24.58	0.46	(S)
Fabricated Metal Products									
Forging and stamping	2.00	1.81	1.06	1.52	0.70	0.79	7.41	0.48	(S)
Boilers, tanks, and shipping containers	2.30	1.88	1.58	0.94	1.67	1.75	2.99	1.11	(NS)
Metal valves	2.27	1.51	1.01	1.15	0.88	0.57	29.78	0.36	(S)
Small arms and ordnance, nondefense	8.46	6.40	5.17	2.97	1.74	0.28	71.69	0.37	(S)
Small arms and ordnance, defense	1.91	1.68	1.30	0.98	1.33	0.43	22.87	0.50	(S)
Other fabricated metal products	1.37	1.00	0.53	0.82	0.65	0.34	66.45	0.32	(S)
Machinery									
Construction machinery	4.58	3.33	2.37	2.13	1.11	0.34	63.85	0.26	(S)
Mining, oil, and gas field machinery	3.61	3.44	2.08	2.61	0.80	0.81	7.28	0.40	(S)
Industrial machinery	3.05	2.19	1.39	1.65	0.85	0.41	34.50	0.25	(S)
Vending, laundry, and other machinery	3.60	2.51	2.07	1.07	1.93	0.80	16.43	0.73	(S)
Photographic equipment	3.24	2.23	1.72	1.54	1.12	0.73	12.52	0.45	(S)
Ventilation, heating, and air-conditioning, and refrigeration equipment	2.70	2.07	1.49	1.20	1.24	0.69	21.36	0.57	(S)
Metalworking machinery	2.08	1.76	1.06	1.40	0.75	0.40	29.74	0.27	(S)
Turbines and generators	2.68	2.46	1.39	1.98	0.70	0.76	12.00	0.48	(S)
Other power transmission equipment	4.59	2.19	1.24	1.74	0.71	1.81	17.75	0.66	(NS)
Pumps and compressors	2.10	1.43	0.97	0.92	1.05	0.39	51.49	0.26	(S)
Material handling equipment	2.22	1.82	1.25	1.22	1.02	0.35	43.76	0.24	(S)
All other machinery	1.88	1.35	1.07	0.74	1.44	0.47	27.11	0.48	(S)
Computers and Electronic Products									
Computers	3.74	2.86	2.47	1.31	1.88	0.97	5.86	0.72	(NS)
Communications equipment, nondefense	2.23	1.95	1.32	1.37	0.96	0.55	13.33	0.37	(S)
Communications equipment, defense	2.74	2.17	1.74	1.23	1.41	0.83	8.04	0.69	(S)
Other electronic components	2.12	1.84	1.08	1.41	0.77	0.55	16.42	0.38	(S)
Search and navigation equipment, nondefense	2.11	1.88	1.06	1.44	0.74	0.58	16.84	0.46	(S)
Search and navigation equipment, defense	1.36	0.94	0.64	0.58	1.10	0.35	54.41	0.32	(S)
Electromedical, measuring, and control instruments	1.42	1.05	0.68	0.73	0.93	0.46	34.56	0.28	(S)
Electrical Equipment, Appliances, and Components									
Electric lighting equipment	2.76	2.20	1.46	1.39	1.05	0.71	21.28	0.45	(S)
Household appliances	12.04	7.15	6.74	1.59	4.24	0.43	28.40	0.83	(S)
Electrical equipment	1.47	1.07	0.86	0.61	1.41	0.50	20.59	0.45	(S)
Other electrical equipment, appliances, and components	2.47	2.17	1.39	1.53	0.91	0.45	30.86	0.34	(S)
Transportation Equipment									
Motor vehicle bodies and trailers	3.65	2.46	1.39	1.84	0.75	0.38	95.40	0.31	(S)
Motor vehicle parts	2.21	1.43	1.20	0.65	1.85	0.39	27.78	0.45	(S)
Aircraft, nondefense	1.70	1.53	0.92	1.22	0.75	0.54	20.21	0.26	(S)
Aircraft, defense	2.11	1.71	1.16	1.09	1.07	0.28	56.69	0.30	(S)
Aircraft engines and parts, nondefense	1.53	1.37	0.93	0.91	1.03	0.66	14.50	0.42	(S)
Aircraft engines and parts, defense	2.14	1.68	1.24	0.95	1.31	0.36	48.36	0.53	(S)
Missiles, space vehicles, and parts, defense	1.96	1.50	0.98	1.02	0.96	0.35	57.07	0.34	(S)
Railroad rolling stock	3.57	3.12	2.36	1.73	1.37	2.03	1.37	1.08	(NS)
Ships and boats, nondefense	2.73	2.36	1.40	1.59	0.88	1.67	3.30	0.83	(NS)
Ships and boats, defense	2.89	1.95	1.54	1.07	1.45	0.50	44.25	0.48	(S)
Other transportation equipment	3.39	2.94	2.37	1.57	1.52	1.75	2.48	1.12	(NS)
Furniture and Related Products									
Household furniture and kitchen cabinets	4.11	2.52	2.12	1.09	1.95	0.45	23.72	0.62	(S)
Office furniture and institutional furniture	3.43	1.93	1.57	1.05	1.50	0.30	60.22	0.33	(S)
Miscellaneous Products									
Sporting goods, dolls, toys, and games	7.21	3.87	3.07	1.90	1.61	2.38	3.03	1.07	(NS)

NS Not seasonally adjusted. S Seasonally adjusted.

Table F-3. **Total Inventories (Seasonal Summary Measures)**

Industry	Average percent changes				Ratio of irregular to trend cycle (\bar{T}/\bar{C})	Ratio of moving to stable seasonality (M7)	F-value	Q-value	Seasonal adjustment indicator
	Original series (\bar{O})	Seasonally adjusted series (\bar{CI})	Irregular series (\bar{T})	Trend-cycle series (\bar{C})					
Food Products									
Grain and oilseed milling	3.56	1.98	1.63	0.97	1.69	0.27	81.51	0.39	(S)
Dairy products	2.66	1.30	1.02	0.71	1.44	0.22	113.41	0.32	(S)
Meat, poultry, and seafood products	1.63	0.86	0.65	0.46	1.41	0.37	36.04	0.52	(S)
Other foods	2.62	0.68	0.58	0.30	1.97	0.17	407.94	0.22	(S)
Beverages and Tobacco									
Beverages	1.60	0.97	0.76	0.53	1.45	0.37	62.61	0.32	(S)
Tobacco	2.68	1.25	1.02	0.58	1.76	0.44	105.03	0.39	(S)
Textile Mills	1.61	0.79	0.49	0.55	0.89	0.32	97.75	0.23	(S)
Textile Products	1.46	0.82	0.47	0.63	0.76	0.31	76.95	0.26	(S)
Apparel	2.19	1.11	0.47	0.98	0.48	0.26	98.25	0.34	(S)
Leather and Allied Products	2.28	1.52	0.89	1.09	0.82	0.48	31.39	0.39	(S)
Wood Products									
Wood buildings and mobile homes	4.00	2.07	1.74	1.07	1.62	0.49	36.51	0.43	(S)
Other wood products	1.50	1.18	0.77	0.74	1.05	0.56	27.34	0.44	(S)
Paper Products									
Pulp, paper and paperboard	1.06	0.76	0.40	0.60	0.66	0.29	65.92	0.26	(S)
Paperboard containers	1.35	1.17	0.69	0.86	0.80	0.50	25.84	0.35	(S)
Other paper	1.30	0.87	0.74	0.40	1.84	0.59	21.22	0.63	(S)
Printing	2.60	1.20	1.01	0.54	1.88	0.17	167.13	0.26	(S)
Petroleum and Coal Products									
Petroleum refineries	2.90	1.99	1.43	1.33	1.07	0.52	43.55	0.38	(S)
Asphalt paving, roofing, and saturated materials	5.08	2.38	1.87	1.22	1.53	0.28	109.56	0.33	(S)
Other petroleum and coal products	4.76	4.06	3.69	1.30	2.84	0.61	16.09	0.77	(S)
Chemical Products									
Pesticides, fertilizers, and other agricultural chemicals	5.33	1.65	1.21	0.95	1.28	0.10	521.49	0.21	(S)
Pharmaceuticals and medicines	1.82	1.38	1.17	0.73	1.61	0.37	35.36	0.47	(S)
Paints, coatings, and adhesives	1.41	0.64	0.53	0.31	1.73	0.19	157.75	0.31	(S)
Other chemicals	0.90	0.64	0.35	0.51	0.68	0.36	52.04	0.22	(S)
Plastics and Rubber Products									
Tires	1.98	1.02	0.64	0.71	0.90	0.24	109.53	0.29	(S)
Other plastics and rubber products	0.99	0.73	0.36	0.61	0.59	0.28	149.35	0.22	(S)
Nonmetallic Mineral Products	1.19	0.61	0.37	0.46	0.79	0.14	240.48	0.12	(S)
Primary Metals									
Iron and steel mills and ferroalloy and steel products	1.29	1.01	0.50	0.85	0.59	0.34	53.25	0.30	(S)
Alumina, aluminum, and nonferrous metal products	1.14	0.93	0.53	0.68	0.78	0.61	14.40	0.44	(S)
Ferrous metal foundries	1.52	1.04	0.64	0.72	0.89	0.20	129.98	0.27	(S)
Nonferrous metal foundries	1.98	1.50	1.30	0.67	1.94	0.59	18.30	0.58	(S)
Fabricated Metal Products									
Forging and stamping	1.38	1.12	0.89	0.65	1.37	0.44	25.44	0.39	(S)
Cutlery and handtools	2.27	1.27	1.04	0.62	1.69	0.42	51.91	0.47	(S)
Boilers, tanks, and shipping containers	2.78	1.46	1.11	0.77	1.45	0.22	142.00	0.35	(S)
Metal valves	0.95	0.80	0.48	0.62	0.78	0.76	12.61	0.41	(S)
Small arms and ordnance, nondefense	2.28	1.35	0.82	0.96	0.86	0.30	132.16	0.28	(S)
Small arms and ordnance, defense	4.78	3.21	2.80	1.15	2.43	1.57	3.34	1.14	(NS)
Other fabricated metal products	0.96	0.71	0.32	0.58	0.55	0.35	70.40	0.27	(S)

See footnotes at end of table.

Table F-3. **Total Inventories (Seasonal Summary Measures)**—Con.

Industry	Average percent changes				Ratio of irregular to trend cycle (\bar{T}/\bar{C})	Ratio of moving to stable seasonality (M7)	F-value	Q-value	Seasonal adjustment indicator
	Original series (\bar{O})	Seasonally adjusted series (\bar{C})	Irregular series (\bar{T})	Trend-cycle series (\bar{C})					
Machinery									
Farm machinery and equipment	2.75	1.35	0.86	0.92	0.94	0.18	191.13	0.19	(S)
Lawn and garden tractors and equipment	8.95	2.79	2.14	1.38	1.54	0.42	99.49	0.39	(S)
Construction machinery	1.49	1.18	0.74	0.84	0.88	0.35	36.58	0.34	(S)
Mining, oil, and gas field machinery	1.79	1.32	0.65	1.07	0.61	0.25	84.99	0.26	(S)
Industrial machinery	2.24	1.19	0.75	0.82	0.92	0.37	47.06	0.31	(S)
Vending, laundry, and other machinery	2.20	1.47	1.30	0.65	2.02	0.85	9.27	0.85	(S)
Photographic equipment	2.76	1.42	1.20	0.79	1.52	0.43	38.78	0.38	(S)
Ventilation, heating, air-conditioning, and refrigeration equipment	2.49	1.17	0.74	0.82	0.90	0.31	92.74	0.26	(S)
Metalworking machinery	2.23	1.27	1.00	0.67	1.49	0.25	78.43	0.34	(S)
Turbines and generators	6.88	2.80	2.38	1.22	1.96	0.31	62.18	0.50	(S)
Other power transmission equipment	1.50	1.03	0.66	0.75	0.88	0.67	33.28	0.38	(S)
Pumps and compressors	1.44	0.90	0.66	0.58	1.13	0.45	30.22	0.35	(S)
Material handling equipment	1.77	1.39	1.00	0.94	1.06	0.48	18.04	0.39	(S)
All other machinery	1.51	1.02	0.72	0.63	1.15	0.47	45.36	0.31	(S)
Computers and Electronic Products									
Computers	5.89	2.97	2.53	1.46	1.74	0.46	22.85	0.48	(S)
Computer storage devices	8.80	2.71	1.95	1.85	1.06	0.37	67.02	0.32	(S)
Other computer peripheral equipment	4.94	1.78	1.46	0.87	1.69	0.30	65.55	0.35	(S)
Communications equipment, nondefense	3.42	2.09	1.32	1.55	0.85	0.47	26.72	0.34	(S)
Communications equipment, defense	3.88	3.37	2.58	1.79	1.44	1.37	2.70	0.91	(NS)
Audio and video equipment	5.37	2.99	2.19	1.58	1.39	0.38	48.74	0.38	(S)
Other electronic components	2.20	1.64	1.03	1.17	0.88	0.72	16.98	0.37	(S)
Search and navigation equipment, nondefense	1.93	1.64	1.14	1.11	1.03	0.44	25.23	0.39	(S)
Search and navigation equipment, defense	2.21	1.86	1.61	0.68	2.36	0.65	12.16	0.74	(S)
Electromedical, measuring, and control instruments	1.91	0.83	0.63	0.54	1.17	0.38	42.18	0.33	(S)
Magnetic and optical media	3.33	2.41	2.06	1.21	1.70	0.44	28.37	0.63	(S)
Electrical Equipment, Appliances, and Components									
Electric lighting equipment	2.28	0.93	0.81	0.42	1.93	0.30	72.17	0.47	(S)
Household appliances	3.95	1.26	0.90	0.77	1.16	0.30	138.96	0.34	(S)
Electrical equipment	2.13	0.98	0.78	0.58	1.33	0.62	10.95	0.61	(S)
Batteries	3.19	1.58	1.11	1.03	1.08	0.33	67.59	0.30	(S)
Other electrical equipment, appliances, and components	1.14	0.77	0.45	0.57	0.78	0.25	77.89	0.22	(S)
Transportation Equipment									
Automobiles	5.47	3.39	3.16	0.94	3.36	0.71	16.34	0.77	(S)
Light trucks and utility vehicles	6.06	3.89	3.50	1.19	2.93	0.51	17.46	0.88	(S)
Heavy duty trucks	2.89	2.13	1.70	1.04	1.64	0.68	12.28	0.66	(S)
Motor vehicle bodies and trailers	2.83	1.84	1.52	0.98	1.55	0.56	22.60	0.56	(S)
Motor vehicle parts	1.39	1.00	0.81	0.55	1.48	0.67	18.53	0.62	(S)
Aircraft, nondefense	2.56	1.83	1.51	0.98	1.54	0.51	23.31	0.36	(S)
Aircraft, defense	2.37	2.12	1.72	1.16	1.49	1.47	3.29	0.85	(NS)
Aircraft engines and parts, nondefense	2.68	1.82	1.45	0.95	1.52	0.59	21.41	0.50	(S)
Aircraft engines and parts, defense	4.16	3.08	2.70	1.36	1.98	0.55	19.11	0.62	(S)
Missiles, space vehicles, and parts, defense	4.65	4.37	2.45	3.11	0.79	0.60	14.85	0.39	(S)
Railroad rolling stock	5.17	2.53	2.21	1.11	2.00	0.48	31.99	0.51	(S)
Ships and boats, nondefense	3.43	2.07	1.50	1.29	1.16	0.96	13.27	0.56	(S)
Ships and boats, defense	3.23	2.67	2.38	0.97	2.46	0.69	9.70	0.81	(S)
Other transportation equipment	3.08	2.10	1.83	0.98	1.87	0.64	13.17	0.57	(S)
Furniture and Related Products									
Household furniture and kitchen cabinets	1.21	0.71	0.49	0.49	1.01	0.38	36.29	0.35	(S)
Office furniture and institutional furniture	1.61	0.94	0.78	0.47	1.66	0.49	43.03	0.42	(S)
Other furniture-related products	2.13	1.66	1.40	0.73	1.92	0.66	13.81	0.64	(S)
Miscellaneous Products									
Medical equipment and supplies	1.25	0.80	0.61	0.50	1.21	0.44	29.50	0.33	(S)
Sporting goods, dolls, toys, and games	2.43	1.27	1.01	0.64	1.59	0.33	48.37	0.42	(S)
Office supplies	3.93	1.66	1.25	0.94	1.34	0.24	104.51	0.35	(S)
Other miscellaneous products	1.69	0.95	0.77	0.52	1.49	0.51	40.82	0.54	(S)

NS Not seasonally adjusted. S Seasonally adjusted.

Table F-4. **Materials and Supplies Inventories (Seasonal Summary Measures)**

Subsector	Average percent changes				Ratio of irregular to trend cycle (\bar{T}/\bar{C})	Ratio of moving to stable seasonality (M7)	F-value	Q-value	Seasonal adjustment indicator
	Original series (\bar{O})	Seasonally adjusted series (\bar{C})	Irregular series (\bar{T})	Trend-cycle series (\bar{C})					
Food products	1.75	1.05	0.90	0.40	2.27	0.33	62.70	0.49	(S)
Beverages and tobacco	1.88	0.96	0.81	0.39	2.07	0.31	101.57	0.41	(S)
Textile mills	1.83	1.40	1.16	0.63	1.85	0.43	25.71	0.53	(S)
Textile products	1.48	1.19	0.81	0.80	1.02	0.33	53.80	0.25	(S)
Apparel	1.91	1.53	0.97	1.06	0.91	0.61	25.60	0.38	(S)
Leather and allied products	2.82	2.45	1.95	1.23	1.59	0.61	13.67	0.65	(S)
Wood products	3.41	1.18	0.95	0.63	1.51	0.28	237.63	0.27	(S)
Paper products	0.88	0.77	0.50	0.57	0.88	0.50	18.02	0.41	(S)
Printing	2.74	1.91	1.65	0.89	1.86	0.34	42.62	0.47	(S)
Petroleum and coal products	3.63	3.05	2.62	1.45	1.81	0.52	25.74	0.42	(S)
Chemical products	0.95	0.85	0.73	0.43	1.69	0.68	12.51	0.57	(S)
Plastics and rubber products	1.23	1.04	0.66	0.81	0.82	0.54	15.05	0.33	(S)
Nonmetallic mineral products	0.91	0.78	0.60	0.41	1.47	0.91	6.26	0.76	(NS)
Primary metals	1.70	1.24	0.75	0.93	0.81	0.32	76.64	0.26	(S)
Fabricated metal products	1.29	1.03	0.74	0.66	1.13	0.64	14.61	0.45	(S)
Machinery	1.44	0.94	0.65	0.63	1.03	0.47	27.92	0.34	(S)
Computers and electronic products	2.00	1.66	1.18	1.11	1.06	0.49	19.20	0.36	(S)
Electrical equipment, appliances, and components	1.41	0.95	0.66	0.62	1.06	0.66	14.27	0.50	(S)
Transportation equipment	1.68	1.20	0.95	0.63	1.51	0.57	18.64	0.54	(S)
Furniture and related products	1.14	0.95	0.75	0.48	1.56	1.03	5.32	0.66	(NS)
Miscellaneous products	1.18	0.85	0.74	0.40	1.85	0.64	14.32	0.62	(S)

NS Not seasonally adjusted. S Seasonally adjusted.

Table F-5. **Work-in-Process Inventories (Seasonal Summary Measures)**

Subsector	Average percent changes				Ratio of irregular to trend cycle (\bar{T}/\bar{C})	Ratio of moving to stable seasonality (M7)	F-value	Q-value	Seasonal adjustment indicator
	Original series (\bar{O})	Seasonally adjusted series (\bar{C})	Irregular series (\bar{T})	Trend-cycle series (\bar{C})					
Food products	5.66	1.74	1.57	0.66	2.37	0.11	383.78	0.21	(S)
Beverages and tobacco	3.60	1.73	1.39	0.92	1.51	0.13	350.05	0.19	(S)
Textile mills	1.72	1.05	0.84	0.52	1.61	0.41	29.62	0.56	(S)
Textile products	2.41	1.34	1.08	0.82	1.32	0.25	89.38	0.34	(S)
Apparel	2.99	1.67	1.01	1.24	0.82	0.44	53.72	0.33	(S)
Leather and allied products	3.96	3.32	2.64	1.61	1.64	0.60	13.80	0.55	(S)
Wood products	1.70	1.41	1.15	0.73	1.58	0.74	12.86	0.69	(S)
Paper products	1.78	1.41	1.24	0.63	1.98	0.54	19.03	0.56	(S)
Printing	6.55	2.52	2.36	0.78	3.02	0.30	74.52	0.41	(S)
Petroleum and coal products	4.57	3.48	3.03	1.37	2.22	0.65	17.22	0.77	(S)
Chemical products	2.13	1.66	1.49	0.64	2.32	0.50	21.77	0.69	(S)
Plastics and rubber products	1.80	1.38	1.17	0.62	1.89	0.49	20.28	0.49	(S)
Nonmetallic mineral products	2.33	1.24	0.99	0.56	1.79	0.16	169.79	0.26	(S)
Primary metals	1.34	1.09	0.68	0.80	0.85	0.74	9.78	0.46	(S)
Fabricated metal products	1.36	0.93	0.66	0.61	1.09	0.35	39.77	0.32	(S)
Machinery	2.16	0.87	0.61	0.54	1.13	0.20	167.12	0.24	(S)
Computers and electronic products	2.49	1.27	0.82	0.86	0.95	0.28	62.96	0.26	(S)
Electrical equipment, appliances, and components	2.00	0.94	0.64	0.55	1.16	0.38	55.78	0.37	(S)
Transportation equipment	1.80	1.23	0.98	0.65	1.52	0.47	29.37	0.41	(S)
Furniture and related products	1.62	1.41	1.19	0.67	1.77	1.13	4.31	0.92	(NS)
Miscellaneous products	2.25	1.54	1.42	0.59	2.39	0.33	36.26	0.64	(S)

NS Not seasonally adjusted. S Seasonally adjusted.

Table F-6. **Finished Goods Inventories (Seasonal Summary Measures)**

Subsector	Average percent changes				Ratio of irregular to trend cycle (\bar{T}/\bar{C})	Ratio of moving to stable seasonality (M7)	F-value	Q-value	Seasonal adjustment indicator
	Original series (\bar{O})	Seasonally adjusted series (\bar{C})	Irregular series (\bar{T})	Trend-cycle series (\bar{C})					
Food products	2.27	0.80	0.67	0.36	1.83	0.22	138.14	0.37	(S)
Beverages and tobacco	3.81	2.10	1.87	0.84	2.21	0.48	23.30	0.56	(S)
Textile mills	2.43	1.33	0.93	0.83	1.12	0.35	70.31	0.25	(S)
Textile products	2.00	1.25	0.90	0.76	1.18	0.28	60.32	0.31	(S)
Apparel	3.13	1.53	0.87	1.21	0.72	0.26	95.11	0.25	(S)
Leather and allied products	3.33	2.23	1.45	1.46	0.99	0.64	17.85	0.43	(S)
Wood products	3.03	1.98	1.60	0.84	1.90	0.27	95.78	0.35	(S)
Paper products	1.57	1.02	0.81	0.54	1.52	0.30	65.88	0.33	(S)
Printing	3.60	1.97	1.74	0.81	2.14	0.69	35.25	0.65	(S)
Petroleum and coal products	3.33	2.25	1.85	1.18	1.57	0.42	47.02	0.46	(S)
Chemical products	1.23	0.87	0.62	0.55	1.13	0.32	59.22	0.24	(S)
Plastics and rubber products	1.52	0.83	0.54	0.62	0.87	0.16	205.82	0.17	(S)
Nonmetallic mineral products	1.83	0.99	0.80	0.59	1.36	0.13	281.79	0.13	(S)
Primary metals	1.65	1.24	0.99	0.64	1.56	0.67	21.25	0.40	(S)
Fabricated metal products	1.63	0.86	0.59	0.53	1.10	0.32	122.19	0.26	(S)
Machinery	1.67	0.78	0.65	0.46	1.42	0.19	129.64	0.24	(S)
Computers and electronic products	4.18	2.01	1.66	1.05	1.59	0.46	35.36	0.41	(S)
Electrical equipment, appliances, and components	2.88	0.94	0.71	0.55	1.29	0.30	109.35	0.37	(S)
Transportation equipment	3.34	1.65	1.41	0.63	2.23	0.49	42.43	0.60	(S)
Furniture and related products	2.17	1.22	1.03	0.62	1.67	0.23	86.69	0.40	(S)
Miscellaneous products	1.71	1.05	0.90	0.49	1.82	0.48	19.63	0.58	(S)

Seasonally adjusted.

Chapter G.

Description of the M3 Benchmark Data for Shipments and Inventories

GENERAL

The estimates for the 2006 Annual Survey of Manufactures (ASM) are based on reports from a representative sample of approximately 50,000 manufacturing establishments and administrative record information for small employers and new businesses. These estimates represent the portion of the manufacturing population accounted for by establishments with paid employees. Nonemployers are defined as out-of-scope of the ASM. The 2006 tables provide 2006 and 2005 estimates for employment, plant hours, payrolls, value added by manufacture, capital expenditures, cost of materials, inventories, value of industry shipments, and fuels and electric energy consumed for most manufacturing industries. Establishments are classified in manufacturing industries by industry definitions described in the *2002 North American Industry Classification System (NAICS) Manual*.¹

SCOPE AND USE OF ANNUAL SURVEY

The 2006 ASM provides the key measures of manufacturing activity for industry groups and important industries for intercensal years. These key measures, as well as other detailed statistics for manufacturing, were collected in the economic censuses; the three most recent censuses covered the years 2002, 1997, and 1992. An annual survey was conducted for each of the years between censuses starting with 1949.

During intercensal periods, these annual surveys provide a continuous series of basic statistics for industries and furnish benchmarks for current business indicators and for measures of industrial production and productivity. The survey also provides significant data in connection with planning for industrial mobilization.

DESCRIPTION OF THE SURVEY SAMPLE

In 2002 there were approximately 346,000 active manufacturing establishments. For sample efficiency and cost considerations, the 2002 manufacturing population is partitioned into two groups: (1) establishments eligible to be mailed a questionnaire and (2) establishments not eligible to be mailed a questionnaire. The following is a description of the 2004 ASM sample design:

1. Establishments that are eligible to be sent a report form:

This is defined as the mail stratum. It is comprised of larger single-location manufacturing companies and all manufacturing establishments of multi-location companies. The mail stratum is comprised of approximately 128,000 establishments. 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 multi-location companies identified from the Census Bureau's Company Organization Survey (COS).

The 2004–2008 ASM sample design differs from the 1999–2003 sample design. For most economic surveys, a number of units are included in the sample with certainty: i.e., their probability of selection for the surveys is 1.00. Remaining units are generally assigned a probability that is consistent with their relative importance in the industry or other key aggregations.

¹North American Industry Classification System (NAICS) United States, 2007. To order the 1,400-page manual in print or on CD-ROM, call (800) 553-6847.

For the 2004 ASM, both the “certainty” criteria and the methodology for deriving the probabilities of selection are revised. The ASM is an establishment-based survey; the establishment serves as both the sample unit and the collection unit. Establishments in the 2002 Economic Census—Manufacturing that satisfied any of the following criteria are included in the sample with certainty: (1) the total employment for the establishment for 2002 is greater than or equal to 1,000; (2) the establishment is identified as one of the 10 largest establishments within the industry (employment); (3) the establishment is classified within an industry with fewer than 20 establishments; (4) the establishment is classified in the computer or flat-glass industry, or (5) the establishment is located within a state where there are fewer than 20 additional establishments in the same North American Industry Classification System (NAICS) group. (NAICS) group is defined as the set of NAICS industries that have the same first four digits). Collectively, there are approximately 9,700 establishments that are selected with certainty. These establishments accounted for approximately 44 percent of the total value of shipments in the 2002 Economic Census—Manufacturing.

Smaller establishments in the remaining portion of the mail stratum are sampled with probabilities ranging from .05 to 1.00. Each of the 473 industries and 1,450 product classes are considered to be a separate population. Using variable reliability constraints, each establishment within a given population is assigned an initial probability of selection that reflects its relative importance within the population. Establishments producing products in multiple product classes receive multiple initial probabilities. The final probability of selection for a specific establishment is defined as the largest of their initial probabilities. This method of assigning probabilities is motivated by the Census Bureau’s 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 are also well represented. For sample selection purposes, each establishment is assigned to an industry stratum. Within each of the 473 industry strata, an independent sample is selected using the final probability of selection associated with the establishments classified within the stratum. A fixed-sample size methodology is used to assure that the desired sample size is realized.

2. Establishments not eligible to be sent a report form:

- a. This is defined as the nonmail stratum. The nonmail stratum consists of small and medium sized single-establishment companies from the Economic Census—Manufacturing. The initial nonmail stratum of the 2004 sample contained approximately 218,000 single-establishment companies from the 2002 Economic Census—Manufacturing. This is significantly higher than previous cycles of the survey and is motivated by the desire to reduce the reporting burden on this segment of the universe.

The nonmail stratum is supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS). Data for establishments included in the nonmail stratum are estimated using information obtained from the administrative records of the IRS and Social Security Administration (SSA), and are included in the published ASM estimates. 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.

- b. All nonemployers, i.e., all firms subject to federal income tax, with no paid employees during 2004, are excluded as in previous ASM. Data for nonemployers are not included in this report, but are released in the annual Nonemployer Statistics series.

The report forms, frequently asked questions, and instructions used to collect information from establishments in the ASM are available at <<http://help.econ.census.gov/BHS/ASM/index.html>>. The ASM reports to review on line are available at <<http://www.census.gov/mcd/asmhome.html>>.

COMPARABILITY WITH HISTORIC DATA

Both the 2002 Economic Census and the 1997 Economic Census present data based on the North American Industry Classification System (NAICS). While there were revisions to selected industries for 2002, this sector is not affected by those revisions.

ESTABLISHMENT BASIS OF REPORTING

The Annual Survey of Manufactures (ASM) is conducted on an establishment basis. Reports are filed for 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. Estimates are based on the reports from a representative sample of manufacturing establishments. These estimates represent the portion of the manufacturing population accounted for by establishments with paid employees. Nonemployers are defined as out-of-scope of the ASM. The tables provide estimates for employment, plant hours, payrolls, value added by manufacture, capital expenditures, cost of materials, inventories, value of industry shipments, and fuels and electric energy consumed for most manufacturing industries.

The ASM 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.

RELIABILITY OF DATA

All estimates produced in the Annual Survey of Manufactures (ASM) are subject to both sampling and nonsampling errors. Sampling error is inherent to all sample surveys and reflects the natural variability in the estimates that occurs because data are only collected from a subset of the population. The estimates are also subject to various types of nonsampling error. Examples of nonsampling error include measurement error and processing error. Nonsampling error is inherent to all surveys, including complete censuses.

1. **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 historical data values. At each level of aggregation, an estimate of the difference between the current reference period and the base reference period is computed for each item from the sample and added to the corresponding base-year values. This difference can be positive or negative. For the 2003–2006 ASM estimates, the 2002 Economic Census—Manufacturing values serve as the base year.

Due to these positive year-to-year correlations, 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 are directly tabulated from the administrative record data provided by the Internal Revenue Service (IRS) and the Social Security Administration (SSA). Estimates of the other data variables are developed from industry averages. Although the nonmail stratum contained approximately 207,000 individual establishments in 2004, it accounted for less than 7 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.

2. **Data Qualifications.** The estimates developed from the sample are likely to differ from the results of a complete canvassing of all eligible establishments in the population. The particular sample selected for the ASM is one of many probability samples that could have been selected under identical circumstances. Each of the possible samples would yield a slightly

different set of results. The derived standard errors are measures of the variation of all of the possible sample estimates around the true population statistic. Estimates with low standard errors are generally felt to be more accurate than those associated with high standard errors.

Estimates of the standard errors are computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard error divided by the corresponding estimate).

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 95 percent of all possible samples.
- From three standard errors below to three standard errors above the derived estimate for roughly 99 percent of all possible 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 are 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 are detected too late to correct the estimates, the data are suppressed or are 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.

EXPLANATION OF TERMS

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 resold without further processing. Included are all items made by or for the establishments from materials 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 multiestablishment 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.

End-of-Year Inventories

Respondents were asked to report their end-of-year inventories at cost or market. 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 another 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 individual industries, industry groups, and manufacturing totals, which are aggregates of figures reported by establishments in specified industries.