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REVISION OF ESTIMATES FROM THE ANNUAL SURVEY OF MANUFACTURES: DETAILED RESULTS FOR 1988-91

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INTRODUCTION

The Census Bureau conducts a Census of Manufactures every five years and an Annual Survey of Manufactures (ASM) in the non-Census years. The goal of the ASM is to produce estimates that represent the employer portion of the manufacturing universe. During Census years, ASM estimates generated from the Census data have typically been low in comparison to the Census estimates. In 1987 and 1992, the ASM estimates for shipments at the all manufacturing level were 2.0 and 3.5 percent lower than the Census values, respectively.[1]

Preliminary analyses of the 1992 Census of Manufactures data also suggested that the 1988-91 ASM estimates understated the true levels of manufacturers' activity. An interagency task force, made up of representatives from the Bureau of Economic Analysis (BEA), the Federal Reserve Board (FRB), and the Census Bureau (CB), was formed to investigate this issue and provide recommendations.[2] After examining the evidence, the consensus opinion was that the understatement in the ASM estimates from 1988-91 was sufficient to warrant a revision to the ASM historical time series.

The understatement in the ASM estimates is called the ASM "drift." The CB identified three primary sources of this drift: classification problems, processing differences, and processing errors. The steps taken by the CB to eliminate the drift are discussed in detail below. When the CB had identified and taken steps to reduce the future impact of these three sources of understatement, the task force turned to the issue of how to revise the historical ASM estimates.

Initial discussions by task force members led to a recommendation that the ten general statistics (GS) variables published in the publication, Statistics for Industry Groups and Industries, be revised for 1988-91. A subgroup was established and charged with performing the actual revisions. The CB undertook the processing of the revisions with continuous consultation with, and feedback from, the BEA and the FRB. This subgroup reported its results to the task force which accepted them as final after further review and discussion.

In the next section, the sources of the drift are discussed and the steps taken to reduce future drift are presented. In the

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[1] Relative standard errors of estimates of total shipments for all manufactures from the Annual Survey of Manufactures are less than 0.1 percent.

[2] Gerald Donahoe and Robert Parker (BEA), Carol Corrado (FRB), and David Cartwright and Charles Waite (Census) share primary credit for the successful completion of the revision as the leaders of the task force.

following section, the methods developed to revise the historical estimates are presented. In the final section, the results of the revision are briefly discussed.

SOURCES OF DRIFT AND THEIR CORRECTION

Classification problems

A significant portion of the drift can be attributed to the cyclical pattern in the updates of the Standard Industrial Classification (SIC) codes on the CB's Standard Statistical Establishment List (SSEL). Prior to the mailing of recent Economic Censuses, single-unit establishments in the SSEL with missing SIC codes were mailed a classification form that requested information on their principal activity. This information was used to assign SIC codes to the establishments for Economic Census processing purposes. Between Censuses, the use of classification forms has been severely restricted, primarily due to cost and reporting burden considerations. As a result, the number of unclassified establishments in the SSEL has varied from year to year, but has tended to be lower during a Census year. Since a portion of these unclassified establishments are ultimately classified within manufacturing, for any given year, the universe of active manufacturing establishments, as determined by the SIC codes in the SSEL establishment records, understates the true manufacturing universe. This understatement is lowest during Census years.

In addition, for the vast majority of the single-unit establishments in the SSEL, the only contact with the Census Bureau has been during the Economic Census. While updates to the SSEL SIC codes are made continuously, it is only during the Economic Census that there is a comprehensive collection of the detailed information necessary to re-classify a large portion of the SSEL. Consequently, establishments tend to remain in the SIC code to which they were assigned in the most recent Census until the next Census.

In the 1992 Economic Census, the net flow into manufacturing from establishments previously classified as non-manufacturing was significant. It was determined that there were two distinctly different types of incoming records: establishments that were classified as nonmanufacturing in the 1987 Economic Census, and establishments added to the SSEL (as nonmanufacturing) subsequent to the 1987 Economic Census. The former group represents valid changes in primary activity; the latter group, which accounted for 60% of the incoming manufacturing cases, is better categorized as "misclassified births"; that is, the SIC assigned to the establishment when it was initially added to the SSEL was probably incorrect. This suggests that there is a systematic bias in misclassification of manufacturing births into

nonmanufacturing SICs. Since births are added continuously to the SSEL from IRS's Business Master File, the degree of undercoverage due to misclassification is likely to be cumulative; that is, as we got further from the 1987 Economic Census, the degree of undercoverage increased.

Processing differences

In non-Census years, the ASM is processed using a system that is designed specifically for the ASM. However, in 1992, the ASM was processed within the Census of Manufactures survey processing system. While similar to the regular ASM processing system, there were subtle differences in data collection, editing, imputation, and analyst review that cannot be totally eliminated. Unlike the problems associated with classification, the impact of these processing differences was limited to only the 1992 ASM estimates and was not cumulative over the 1988-91 time frame. This suggests that the 1992 ASM estimates derived using census files are not totally comparable to the 1988-91 ASM estimates.

During non-Census years, ASM establishments receive either a short form or a long form. On both forms, the prior year general statistics and product class data are usually preprinted. In the Census year, these same establishments receive the appropriate Census long form (industry specific) with the front page replaced with an ASM long form. Again, general statistics data is preprinted, but no product class data is preprinted (seven-digit product data is collected in lieu of five-digit product class data). Also, there are additional items collected from these ASM establishments during the Census. While there are strong similarities between the ASM form in a non-Census year and a Census year, there are enough differences to raise the possibility of differential reporting in 1992 solely due to form differences.

In general, the editing and imputation operations for ASM establishments are virtually identical in ASM years and Census years. Both of these operations involve parameters that vary considerably across the set of four-digit SICs. During non-Census years, the four-digit SIC is not allowed to change for approximately half the establishments in the ASM sample. For the remaining ASM sample cases, the four-digit SIC can only be updated if specific conditions are satisfied. However, during Census years, the four-digit SIC is rederived for all establishments in the ASM who provide sufficient information on the questionnaire. This results in a number of ASM establishments being edited and imputed using one set of industry parameters in a Census year and a different set of industry parameters in a non-Census year.

Most importantly, the analysts' review of the 1992 ASM estimates was significantly different than it was during the 1988-91 time frame. While an ASM data file was assembled from the Manufacturing Census data file and the estimation procedure replicated, the normal interactive database that is used to review and analyze the ASM estimates was not created. The analyst review of the 1992 ASM estimates was conducted using only the Census database supplemented with a limited set of special ASM listings. Therefore, the database tools that the analysts normally have for reviewing the ASM estimates were not available in 1992. Their ability to conduct searches and isolate outliers that were significant within the context of the ASM was severely restricted.

Processing errors

The originally published 1989 ASM estimates appear to be uniformly low in comparison to other comparable time series. This suggests that the newly selected 1989 sample was not as representative as expected or that there were undetected processing errors in producing the estimates. The 1989 ASM sample was selected from the 1987 Census of Manufactures prior to the completion of the analysts' review of the 1987 Census. In particular, there remained a number of establishments in the Census files that were incorrectly classified as manufactures. A portion of these were selected for the 1989 ASM sample. At a later date, many of these were discovered to be non-manufacturing and were removed from the ASM sample (and the Census, if possible). An off-line procedure for adjusting the 1989 estimates to improve the 1987 to 1989 estimates of change was developed. Unfortunately, the controls used to assure that the procedure was properly employed were not as tight as we would have liked. The impact of not using the procedure in all appropriate situations was to understate the 1989 ASM estimates.

We employ a comprehensive set of sample maintenance procedures designed to maintain the representativeness of the sample over the life of the sample. On an annual basis, new manufacturing establishments are identified and sampled for inclusion in the sample; out-of-business establishments are identified and deleted from the sample; and changes in ownership are recorded for subsequent mailings. With a sample of over 58,000 establishments, errors in maintaining the sample are unavoidable. Despite these tightly controlled procedures, some deterioration in coverage is unavoidable.

Correcting for the drift

Beginning with the 1993 ASM, the CB introduced three new procedures to the ASM processing to reduce the cumulative drift in future estimates. These improvements will result in unclassified and misclassified manufacturing establishments being represented in the ASM estimates and will more tightly control the effect on the estimates of establishments being re-classified as non-manufacturing.

Establishments that are converted from "unclassified" to manufactures in the SSEL will be assigned a weight that will make them representative of the remaining unclassified establishments in the SSEL (in the past, they were included in the ASM sample with a weight of one). This procedure will be repeated annually. The significance of this procedure on the ASM estimates will be directly dependent on the number of unclassified establishments in the SSEL.

Single-unit manufacturing births will be assigned a weight designed to account for the expected undercoverage of the true birth universe due to misclassification bias. We are making the assumption that this classification bias will continue through 1997, at which point we will re-examine the issue.

Finally, a "reserved" scope procedure is being developed to assure proper representation of establishments exiting the ASM sample due to being converted to non-manufacturing. This should have a direct impact on the year-to-year estimates of change. Note that this procedure is being implemented beginning with the 1995 ASM. It was not necessary with the 1993 or 1994 ASM's because the analysts were able to correct the 1992 Census, 1993 ASM, and 1994 ASM concurrently.

THE REVISION

The necessary revision consisted of two distinct parts. The first was a reestimation of statistics for selected industries in 1989. In this part, new levels of each variable were estimated directly. The second part was an estimation of the cumulative level of "drift" in ASM estimates in 1992, and the distribution of that cumulative drift across the years 1988-92. In this part, the drift revisions were estimated for each variable and then new levels were calculated by adding these revisions to the previously published (or newly estimated 1989) levels.

Final results were needed for four-digit-SIC industries. An aggregate level of detail was adopted for processing. This level was determined separately for each part of the revision. In each case, the resulting estimates at the aggregate level were used as the basis for revisions at more detailed levels. The CB

performed both parts of the revision with input from the BEA and FRB, then provided the BEA with estimates at the three-digit-SIC level. The BEA spread the revisions to the four-digit-SIC level and returned them to the CB which compiled a complete set of total, two-digit, three-digit, and four-digit estimates that were submitted to the full task force for approval. The task force accepted the revised estimates which were then distributed to BEA and FRB, and made available to the public.

Planned steps

The revision procedure initially planned and agreed to by the interagency task force was:

1. Reestimate the ten ASM general statistics (GS) variables for 1989. These are number of employees, payroll, number of production workers, production workers' hours, production workers' wages, value added by manufacture, cost of materials, value of shipments, new capital expenditures, and end-of-year inventories.

2. Create 1992 pseudo-ASM tabulations as if an ASM had been conducted in 1992.

3. Adjust the 1992 pseudo-ASM results for discrepancies between 1991 ASM end-of-year inventory estimates and 1992 pseudo-ASM beginning-of-year inventory estimates.

4. Adopt the previously published estimates of the ten GS variables for 1988, 1990, and 1991, and the estimates for 1989 from step 1 as the "historical" estimates.

5. Calculate the cumulative ASM drift in 1992 for each GS variable for each industry as the difference between the 1992 Census value and the adjusted 1992 pseudo-ASM value.

6. Distribute the cumulative ASM drift revision to the years 1988 to 1991 by adding 1/5th of the cumulative drift to the 1988 historical level, 2/5th's of the cumulative drift to the 1989 historical level, 3/5th's to 1990, and 4/5th's to 1991.

These steps were modified during implementation as described below. The general approach was not changed. Chart 1 illustrates the revision process. It shows the value of shipments by all manufactures as originally published (with the unpublished 1992 pseudo-ASM as a logical end point), after the 1989 reestimation, after the 1992 pseudo-adjustment, and as finally revised. The final estimate for 1989 is higher than it would have been without the reestimation of that year. The overall upward revision due to the drift is less than it would

have been if the 1992 pseudo-ASM was not adjusted. Staff of all three agencies agreed that these modifications resulted in an historical data series that is more reasonable and consistent with data available from other sources.[3]

Implementing the steps

The subgroup first considered the level of aggregation for calculating revisions. The CB argued that the revisions should be done at the two-digit-SIC level because resources were not available for detailed review of micro data in any but the worst cases. BEA and the FRB objected that there were specific three-digit-SIC industries that they needed to see separately.

After discussion of the benefits and costs associated with working at the two-digit-SIC level and the three-digit-SIC level, the BEA and the FRB submitted lists of three-digit-SIC industries of highest priority for separate tabulation. The CB merged the lists and identified the 19 industries that together made up the ten highest priority industries of the BEA and the FRB. These 19 industries formed the basis for what the CB proposed as a merged industry list. This merged list contained the 19 industries, the residual of any two-digit-SIC under which partial three-digit-SIC detail was being proposed, and two-digit-SIC industries where three-digit detail wasn't proposed.

For example, the two-digit-SIC 21 consists of the three-digit-SIC's 211, 212, 213, and 214. The combined BEA/FRB top ten list contained industry 211 but not industries 212, 213, or 214. The merged list proposed by the CB contained 211 and 21R where 21R was the combination of 212, 213, and 214. On the other hand, none of the nine three-digit-SIC's contained in the two-digit-SIC 23 were present in the combined top ten list so the merged list contained industry 23 with no other detail.

This merged list served as the starting point for both parts of the revision. Modifications were made during each part based on the BEA and FRB's need for industry detail and the task force subgroup's judgment of the quality of the estimates. Since these needs and judgments varied during the two parts of the revision, slightly different lists were finally used. These points are discussed in more detail below and the lists are shown in Attachments 1 and 2.

The first part of the revision was the reestimation of the ten GS variables for 1989. A link-relative estimation technique was

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[3] Results from the Annual Survey of Manufactures are routinely compared to estimates from the Manufactures' Shipments, Inventories, and Orders survey, and the Quarterly Financial Reports series.

adopted. A link relative was applied to the 1987 Census value of each GS variable to create a 1989 value. This was done for each industry on the merged industry list and is described in detail in the Appendix.

Several seemingly spurious results were detected in the initial results of this part of the revision by analysts at all three agencies. This led to a proposal that the reestimation only be performed for industries where the available respondent data represented a large portion of total shipments and to a request that several three-digit-SIC's be shown separately in the merged industry list for this part of the revision.

Using a modified merged industry list, the industries were divided into two groups: those for which the shipments of establishments available for reestimation accounted for 95 percent or more of the 1987 Census value of shipments for the industry, and those for which these establishments accounted for a smaller share of the total. The 39 of the 64 industries on the modified merged industry list that were reestimated are denoted in Attachment 1 with an asterisk (*).

The second part of the revision began with the tabulation of pseudo-ASM estimates for 1992. These estimates are referred to as pseudo-ASM estimates because the review of ASM data and estimates was overshadowed by Census operations. In addition, the Census processing systems in use during this period were more suited to completion of the Census than to preparation of estimates from an ASM sample. The CB attempted to compensate for the absence of normal ASM processing conditions by adjusting the pseudo-ASM estimates for discrepancies between ASM 1991 end-of-year inventory estimates and pseudo-ASM 1992 beginning-of-year inventory estimates for each industry.

Analysts at all three agencies indicated that some initial results of these tabulations were unreasonable. This led to a proposal that the inventory adjustment not be performed for industries in which ASM "certainty cases" accounted for more than 95 percent of the Census value of shipments in 1992 (also for one industry in which analyst review concluded that the results of the adjustment were unreasonable). With this change, and after some modification of the merged industry list based on requests from all three agencies, estimates of the cumulative drift for 1992 were obtained. The final industry list is shown in Attachment 2.

To complete the revision, an historical time series for each GS variable for each industry on the final list was formed from previously published estimates for 1988, 1990, and 1991, and either the reestimated value or the previously published value for 1989. The cumulative 1992 drift for that variable for that industry was distributed to the years 1988 to 1991 by adding

1/5th of the cumulative drift to the 1988 value, 2/5th's of the cumulative drift to the 1989 value, ..., and 4/5th's of the cumulative drift to the 1991 value.

Next, the percent revision in each variable for each industry on the final industry list was distributed to a more detailed industry level. The percentage revision in each variable was applied to the historical levels of that variable for each three-digit-SIC industry within the estimated industry. This produced revised estimates for the ten GS variables for each three-digit-SIC industry. Finally, the BEA allocated the revision in each variable for each three-digit-SIC industry to the four-digit industries within that three-digit industry on the basis of the proportion accounted for by each four-digit industry.

This revision is limited to the ten GS variables listed earlier. It was performed as outlined above and did not involve reediting or revising of data reported by survey respondents. Tabulation of individual respondent data was done only as discussed in the procedure for reestimating estimates for 1989. Geographic estimates have not been revised nor have estimates of product or product class shipments. Additional tabulations of respondent data to produce estimates of other variables consistent with this revision are not appropriate or available.

REVISION RESULTS

Revised estimates are available at the four-digit-SIC level in 1993 and 1994 ASM publications, and on Census Bureau CD-ROM's. Tables 1 and 2 show the data values at the two-digit-SIC level for the ten GS variables before (Table 1) and after (Table 2) the revision. Table 3 shows the revisions in the originally published 1989 estimates due to the reestimation of 1989 for the reestimation tabulation industries. Table 4 shows the cumulative drift in 1992 in each of the ten GS variables for each drift tabulation industry. Table 5 shows the annual percentage changes in the total value of shipments before and after the revisions for each three-digit-SIC industry.[4] The industry names associated with the industry codes in these and later tables are shown in Attachment 3. In Chart 5, industry codes are presented only for highlighted industries.

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[4] Tabulation industries are displayed in Tables 3 and 4 since those are the industries for which these data were actually calculated. Since the new annual changes in Table 5 are a byproduct of the revision process, they are presented at a level of detail intended to be useful. The four-digit-SIC level would have made Table 5 too bulky. Data for all three-digit-SIC industries are present in Chart 5 -- sorted in descending order, and beginning with 201 on the far left and ending with 399 on the far right.

Revisions in estimates

Chart 1 shows the total value of shipments for all manufactures at selected stages in the revision. The upward revision in 1989 due to reestimation in the year is shown along with the distribution of the 1992 cumulative drift to the earlier years.

Chart 2 shows the cumulative drift in 1992 by variable for all manufactures. The cumulative drifts in total value of shipments and in end-of-year inventories for all manufactures in 1992 were just over 2 percent. The drift in most variables was between 2 and 4 percent. The largest drift was 11 percent in new capital expenditures. The smallest was 1 percent in production worker hours. The drift in total value of shipments for all manufactures was just over 2 percent.

Chart 3 shows the cumulative drift of total value of shipments in 1992 for the drift tabulation industries (Attachment 2). The drift was not evenly distributed across industries. The largest percentage drifts in value of shipments were in industry 37B, Residual of Transportation Equipment (-15%), and industry 374, Railroad Equipment (14%). In dollar terms, the largest drifts were in industries 20B and 38B which are: Residual of Food and Kindred Products ($11 billion), and Residual of Instruments and Related Products ($6 billion).

Chart 3 also shows that the drift in value of shipments was sometimes negative. Negative drifts were due to classification differences between the 1992 pseudo-ASM and the 1992 Census. During ASM processing, only establishments meeting selected criteria are allowed to change classification. In a Census year, all establishments are classified using the most recently available information. Establishment classifications for the 1992 pseudo-ASM were based on the ASM procedures.

Chart 4 shows the revisions in total value of shipments in 1989 due to reestimation. These are shown by retabulation industry and before any revision for drift. The industries with the largest dollar revisions are 20R, 371, and 37R which are: Residual of Food and Kindred Products ($9 billion), Motor Vehicles and Equipment ($6 billion), and Residual of Transportation Equipment ($4 billion). The largest percentage revisions are in 20R, 205, and 37R which are: Residual of Food and Kindred Products (3%), Bakery Products (3%), and Residual of Transportation Equipment (-3%).

Revisions in growth rates

We next consider the effect of the revisions on annual growth rates of total value of shipments by industry. To summarize the

changes in these growth rates the sum of the squared changes was calculated for each industry. First, each industry's annual growth rates for total value of shipments were calculated for the period 1987-92 before and after the revisions. For each period, the difference between the before and after growth rates were calculated and squared. For each industry, the sum of these squares was calculated.

For example, the calculations for industry 214 (Tobacco stemming and redrying) are:

Calculations for Total Value of Shipments for Industry 214

Period	Annual Growth Rates (as percentage)		Squared Difference*
	Before	After	
1987-88	13.83	13.89	0.00
1988-89	4.03	6.29	5.14
1989-90	9.52	7.28	5.03
1990-91	11.53	11.56	0.00
1991-92	18.27	18.07	0.04
		Sum	10.22

* Displayed data are rounded. Calculations were performed with unrounded growth rates and differences.

The results of these calculations are presented in Chart 5. The pattern of year-to-year changes in industries 374, 375, and 379 (Railroad equipment; Motorcycles, bicycles, and parts; and Miscellaneous transportation equipment) were changed far more than others by the revisions. Charts 6, 7, and 8 show the values of shipments for these industries before and after revision.

The most significant change in growth rate for 374 (Railroad equipment) occurred in 1992. The drift had caused the level of the industry to be too high and a correction in the level in 1992 would have appeared as a year-to-year decline. By correcting the earlier years, we observe an increase from 1991 to 1992. A similar situation had developed for industry 375 (Motorcycles, bicycles, and parts). By 1991, the drift had raised the level of spending to a point where the correction caused by the 1992 Census would appear as a decline from 1991 to 1992. By adjusting the earlier years, we observe a continuation of the historical industry growth during the same period.

In industry 379 (Miscellaneous transportation equipment), the situation is different. Rather than a year-to-year decline in 1991-92, there was a large increase from 1991 to 1992 before the revisions. When the earlier years are adjusted for an upward drift (industry 379 was part of the same residual industry as industry 375 for drift correction), the growth from 1991 to 1992 is increased. A lack of growth from 1988 to 1991 was changed to a

steady decline from 1987 to 1991. The growth from 1991 to 1992 necessary to meet the Census estimate was made larger.

A more detailed review of the results of the revisions is beyond the scope of this paper and the resources available to the authors. Such review would certainly lead to additional issues that could be considered for future revisions. For example, the differences between the historic growth rate patterns of industries 375 and 379 resulted in the same drift adjustment having different effects on their growth rate patterns. This suggests that similarity of historical patterns of growth might be a useful criterion for grouping industries during revision calculations. With the resources available for this revision, the values reported here for all industries are judged by the three agencies making up the task force as the best that can be provided.

Chart 1. Manufactures' Shipments at Selected Stages of Revision

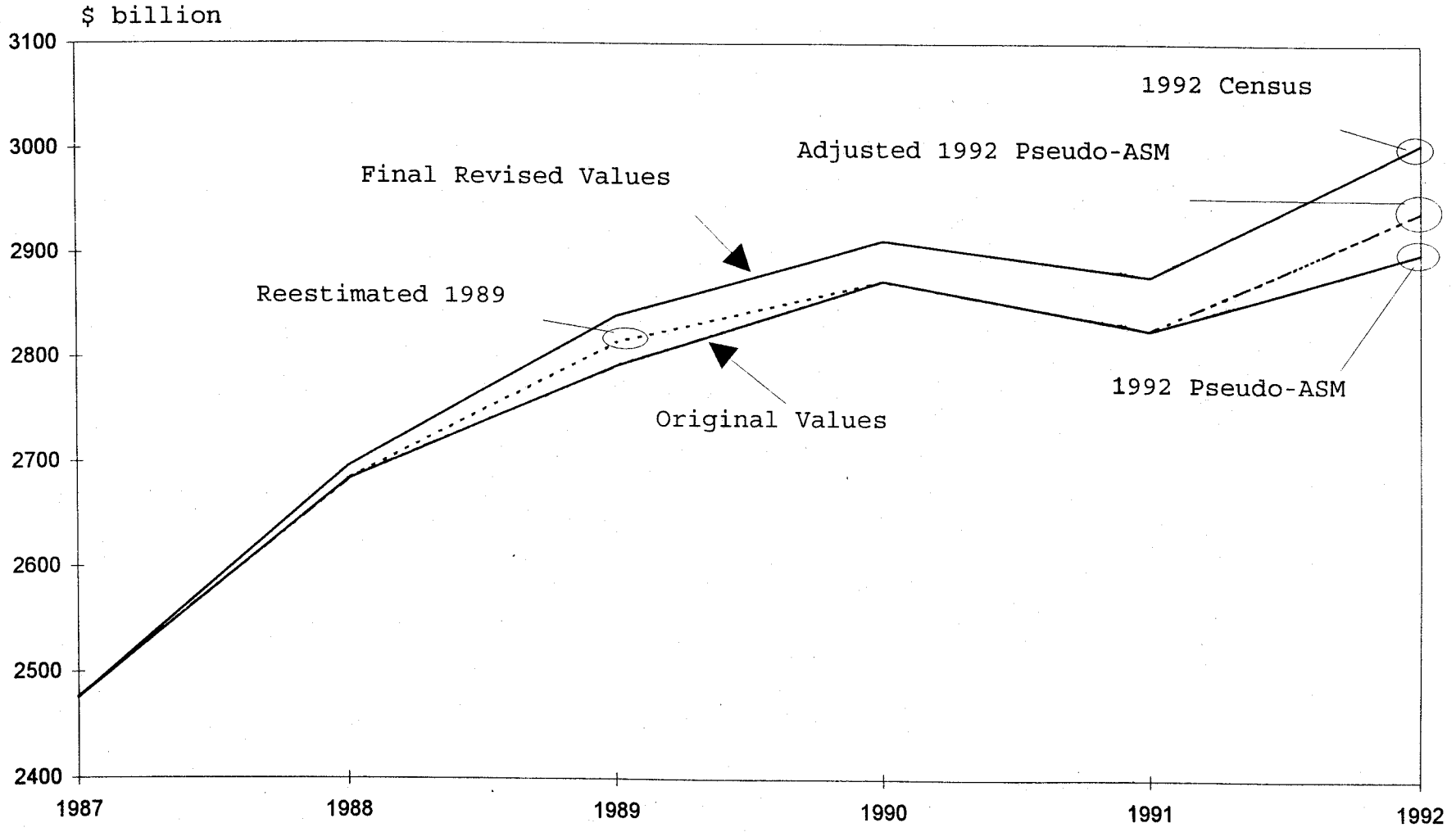


Chart 2. Cumulative Drift in 1992 as Percent of "ASM" Value

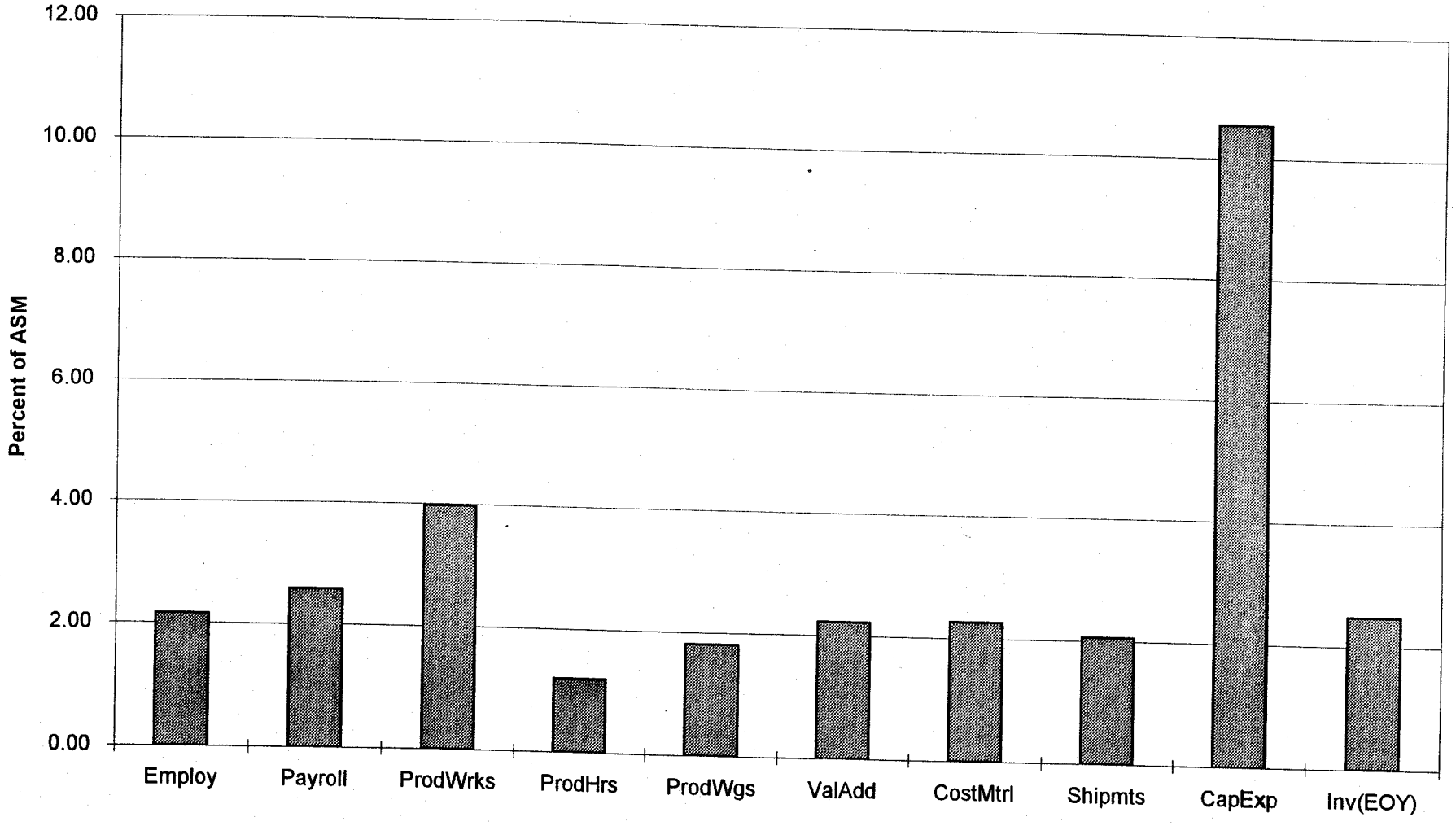


Chart 3. Cumulative Drift in Shipments Estimate: $ Million and Percent of "1992 ASM"

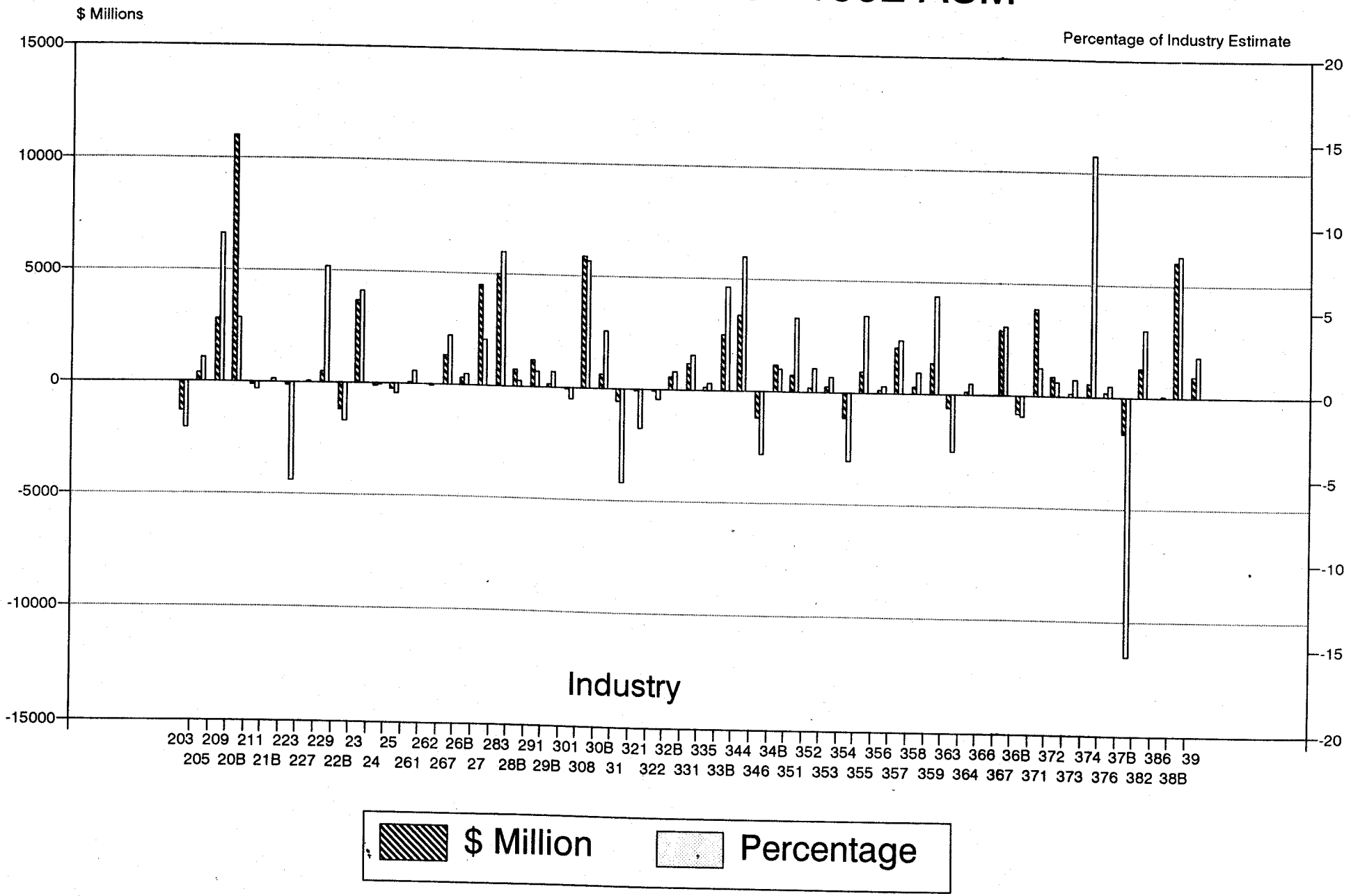


Chart 4. Revisions in Total Value of Shipments in 1989 Due to Reestimation

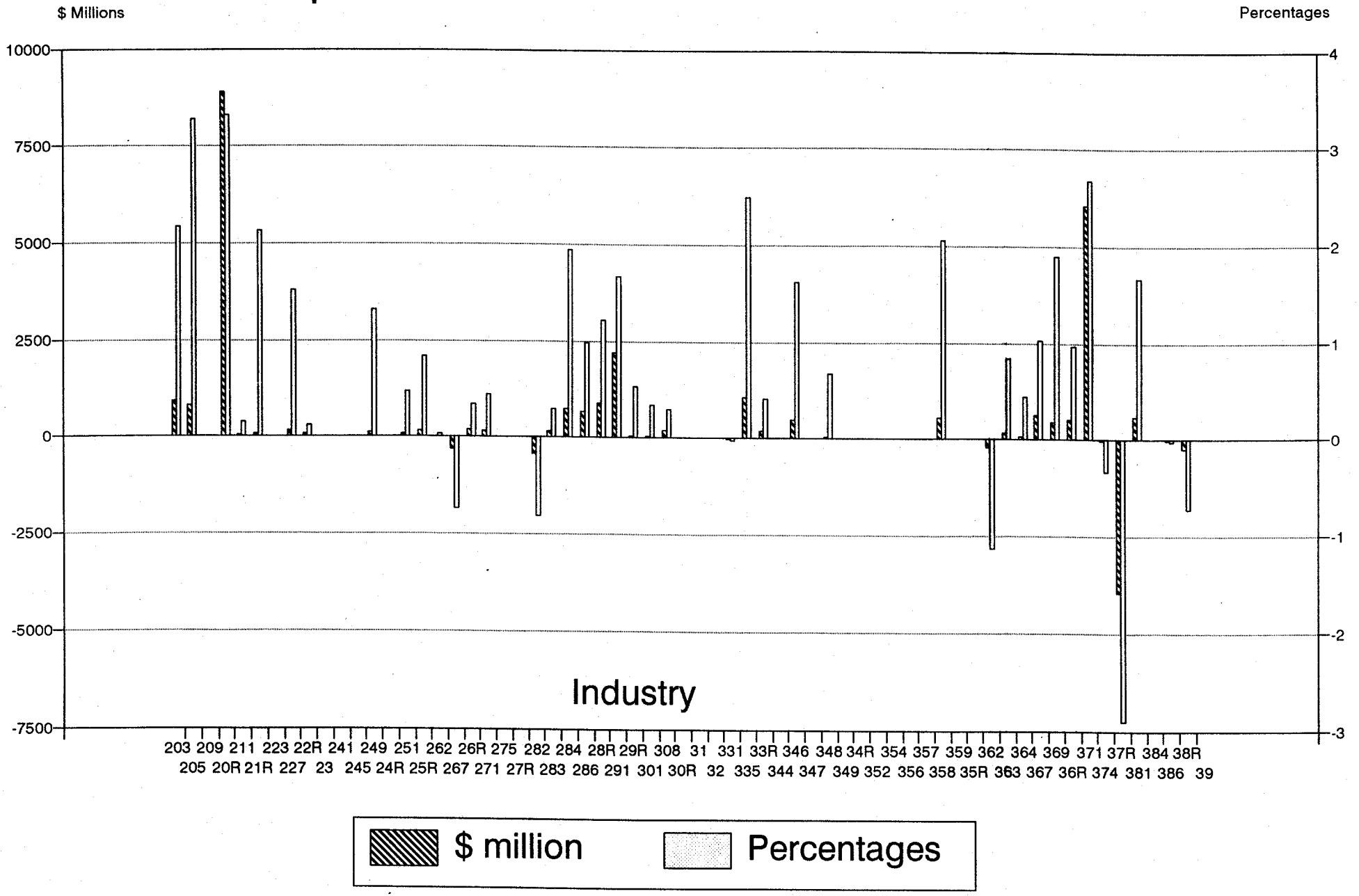
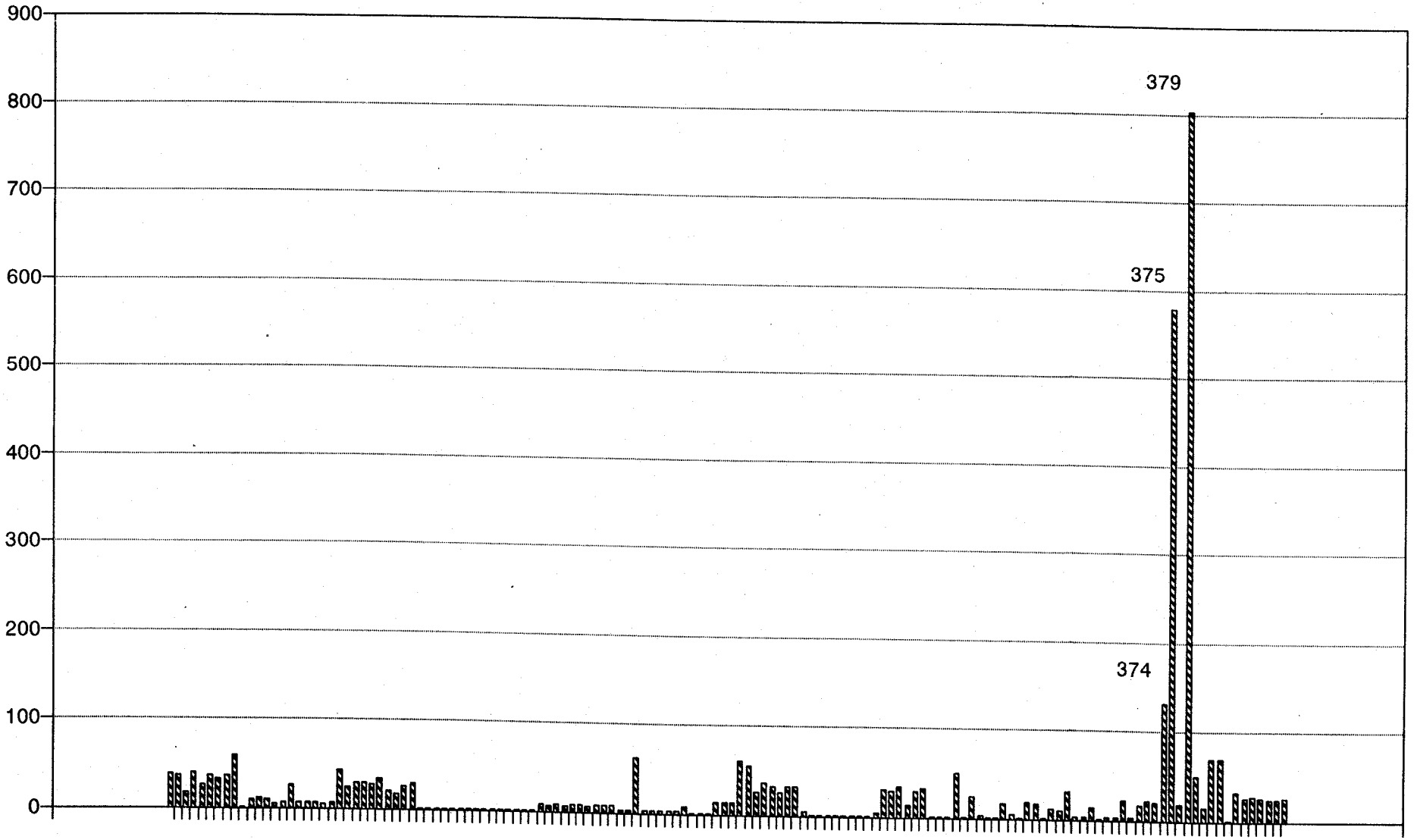


Chart 5. Sum of Squared Changes in Annual Growth Rates of Shipments for 1988-92



Three-Digit SIC Industries

Chart 6. TVS Before and After Revision: 374

Chart 7. TVS Before and After Revision: 375

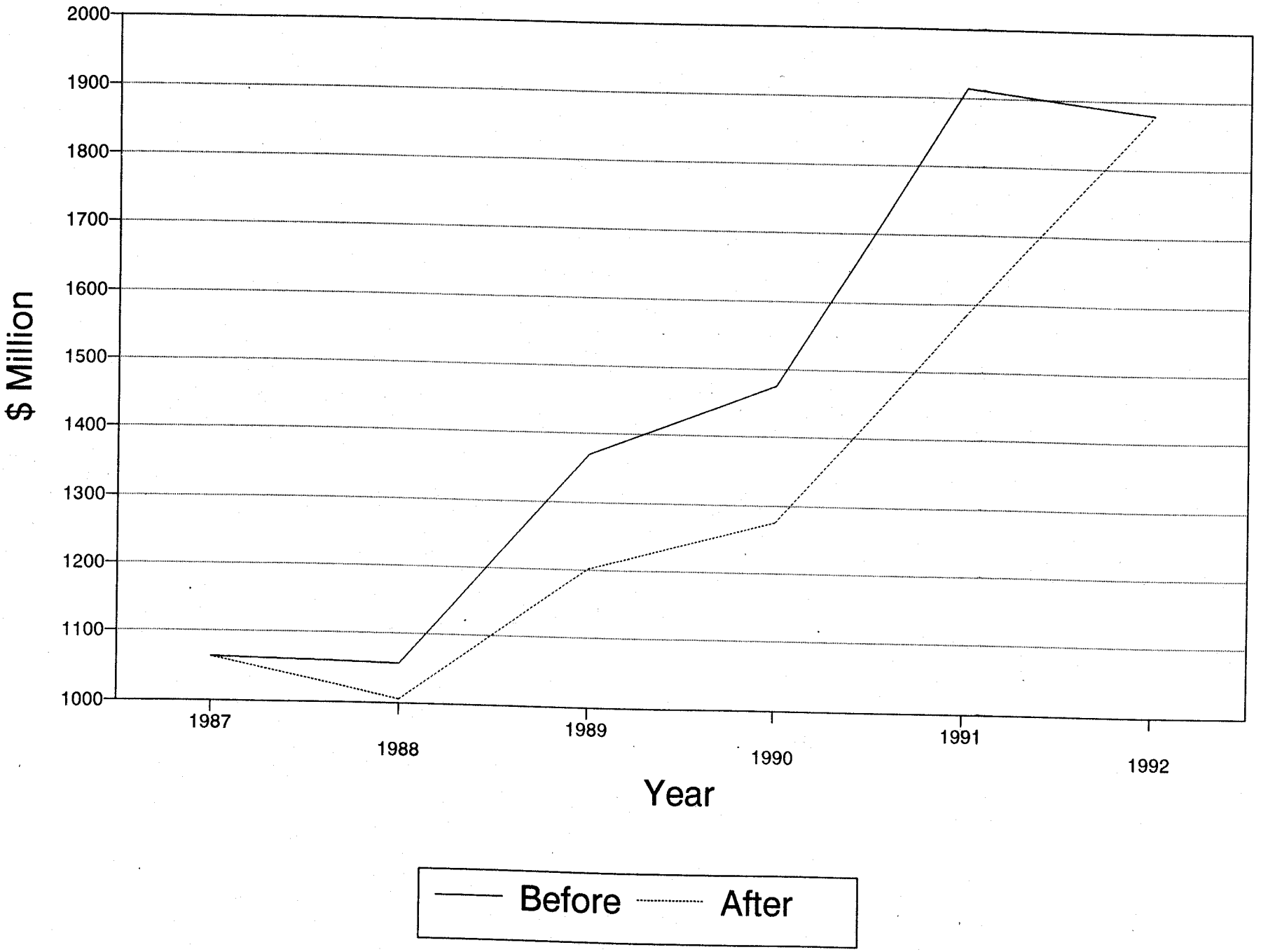


Chart 8. TVS Before and After Revision: 379

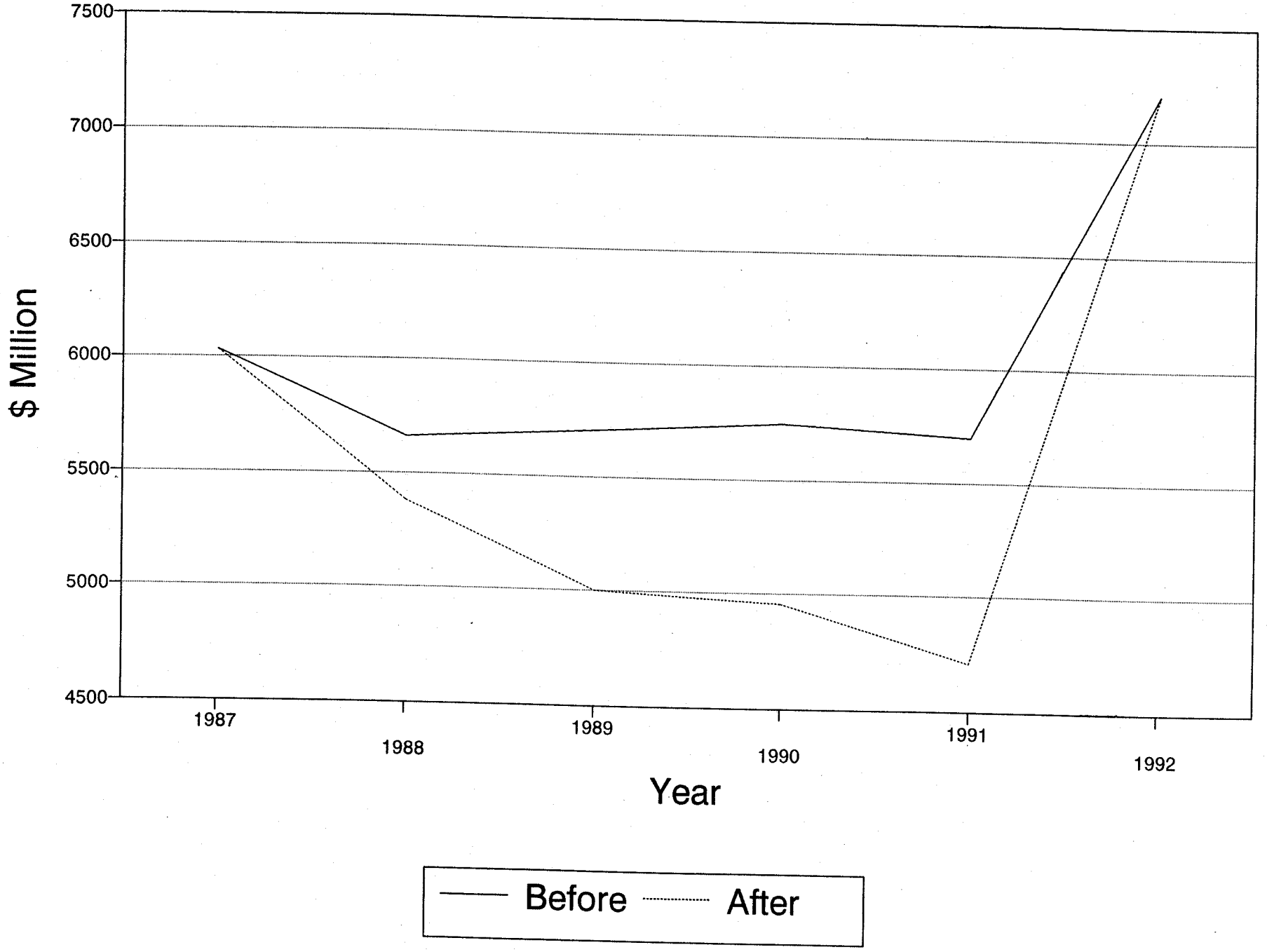


Table 1: Historical Estimates for Manufacturing Industries Before Revisions

Year	Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipment $million	New Capital Expenditure $million	End-of-Year Inventories $million
1987	20	1448.8	30267.2	1029.0	2019.2	18899.5	121608.7	208754.8	329725.4	7197.5	25305.3
1987	21	44.7	1485.6	32.6	61.4	1010.4	14263.8	6490.6	20757.0	464.3	5562.0
1987	22	672.1	11409.2	575.0	1175.5	8728.4	25660.0	37565.3	62786.5	2027.9	7642.9
1987	23	1080.8	13903.6	911.7	1616.0	9879.2	32515.5	32005.4	64243.0	736.3	8974.0
1987	24	696.4	12706.7	581.5	1151.1	9523.7	28664.4	41259.1	69746.5	1825.1	7229.9
1987	25	510.8	9082.4	410.0	804.8	6253.2	20310.3	17324.0	37461.9	895.1	5406.9
1987	26	611.1	16859.6	465.6	972.0	11776.0	50488.8	58753.1	108989.0	5752.4	11111.1
1987	27	1494.0	33440.1	797.1	1537.5	15658.9	90162.3	46372.1	136195.6	4908.3	9940.6
1987	28	814.2	25016.5	462.9	944.5	12312.6	120777.5	109230.9	229546.0	8710.5	26387.6
1987	29	115.8	3996.1	76.4	158.1	2458.8	18518.4	112776.7	130414.0	2340.6	9797.1
1987	30	831.0	17575.3	643.1	1283.0	11693.7	44418.0	42504.5	86603.2	3410.0	9982.3
1987	31	129.0	1830.5	109.0	205.9	1301.4	4377.9	4754.9	9082.4	100.8	1572.9
1987	32	523.6	12349.1	405.0	832.8	8794.6	33383.0	28143.0	61477.1	2417.4	7031.6
1987	33	701.0	19777.4	541.3	1114.2	14163.1	46120.9	74692.2	120248.3	3850.8	18976.3
1987	34	1458.1	34999.6	1077.8	2183.8	22781.4	74957.9	72668.6	147366.1	4816.5	22554.8
1987	35	1844.3	50553.0	1142.9	2313.8	26092.4	118187.7	99569.5	217669.8	6954.9	42277.8
1987	36	1564.7	38738.2	999.8	1959.3	19716.8	95815.3	76194.7	171286.2	6874.9	29088.2
1987	37	1817.1	58790.5	1244.2	2443.5	34825.6	137076.4	198854.1	332935.3	10779.8	55061.9
1987	38	982.0	28778.0	502.6	1003.6	11531.4	70974.5	37211.5	107324.9	3872.2	23013.1
1987	39	374.4	6884.3	271.6	520.8	4028.0	17452.7	14665.9	32012.0	712.1	5696.8
1987	AUX	1233.6	47201.7	--	--	--	--	--	--	--	--
1988	20	1464.8	31420.3	1045.5	2059.7	19622.0	128766.4	223673.9	351512.2	7492.7	27351.9
1988	21	44.7	1501.2	33.2	60.2	1008.3	17155.2	6690.6	23831.6	409.7	5474.7
1988	22	668.5	11554.1	571.5	1158.5	8831.3	26282.0	38808.6	64767.0	2242.7	8078.9
1988	23	1065.9	14278.1	894.6	1581.6	10041.5	32453.7	32609.4	65030.6	672.1	9308.9
1988	24	704.1	13349.5	585.1	1164.1	9978.5	29038.2	43309.4	72065.4	1731.9	7682.0
1988	25	509.3	9487.5	411.1	804.7	6550.6	20854.2	18522.8	39226.0	936.0	5719.6

Table 1: Historical Estimates for Manufacturing Industries Before Revisions

Year	Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipment $million	New Capital Expenditure $million	End-of-Year Inventories $million
1988	26	618.8	17625.5	475.5	997.3	12301.1	57355.4	65749.2	122556.0	7210.6	12385.5
1988	27	1498.0	35033.6	799.0	1565.9	16265.9	94108.7	50349.8	143906.8	5008.1	11096.9
1988	28	829.9	26395.6	475.1	978.2	12928.8	137878.8	123937.4	259697.9	10858.0	29372.2
1988	29	115.3	4142.2	76.5	158.2	2524.2	25279.8	105305.8	131414.5	2614.1	9021.5
1988	30	860.0	18750.3	666.3	1337.9	12422.5	46584.9	48209.2	94200.3	3558.6	11144.0
1988	31	128.2	1880.5	108.4	202.5	1327.6	4528.1	5184.2	9663.1	100.0	1720.6
1988	32	522.8	12734.7	401.4	819.9	9023.0	34235.0	29072.8	63059.3	2244.2	7373.2
1988	33	726.3	21465.3	562.0	1181.6	15507.6	56486.8	94666.4	149079.9	4669.9	22270.7
1988	34	1487.5	37140.2	1103.9	2261.9	24190.2	79693.1	80034.7	158834.0	4168.7	24379.5
1988	35	1898.7	54275.2	1195.9	2438.5	28225.2	129413.5	116859.1	243357.4	6859.0	46552.1
1988	36	1580.6	41105.2	1012.4	1987.7	20756.1	103475.4	84680.5	186950.9	7972.4	30733.0
1988	37	1815.8	61315.9	1196.1	2452.0	36424.8	143500.1	215276.9	354047.6	7147.3	61416.9
1988	38	986.1	29936.5	506.9	1001.5	11852.4	76094.4	38851.8	114528.0	3961.0	24278.5
1988	39	392.2	7384.4	283.7	546.4	4318.2	19028.2	16037.3	34869.5	714.7	6150.6
1988	AUX	1230.8	51887.9	--	--	--	--	--	--	--	--
1989	20	1458.6	32108.5	1049.0	2079.4	20128.2	132032.5	232986.1	364403.4	8329.5	27710.6
1989	21	43.2	1494.9	32.0	57.8	999.0	18922.4	6876.0	25803.0	399.3	5706.4
1989	22	652.7	11836.6	565.9	1147.6	9101.1	27367.9	40310.2	67321.2	2276.8	8344.7
1989	23	1017.9	14047.4	864.5	1552.3	10021.6	32502.1	31183.0	63398.5	828.7	9113.3
1989	24	685.8	13359.5	570.9	1140.7	10014.8	29627.3	44895.7	74328.4	1954.0	7881.5
1989	25	508.2	9737.7	407.6	798.5	6618.3	21332.1	19891.9	41152.5	986.1	5766.4
1989	26	629.5	18397.0	483.9	1013.2	12813.8	61208.1	70781.0	131366.2	10067.2	13189.1
1989	27	1503.8	36643.9	806.0	1560.6	16656.2	97815.7	52526.0	149911.7	5761.0	11394.2
1989	28	848.4	28475.2	484.2	985.9	13622.6	146055.8	133178.2	278085.1	13480.1	30831.0
1989	29	111.6	4181.5	73.6	159.4	2543.7	26047.8	118669.7	143702.0	3331.2	10373.6
1989	30	877.1	19660.1	678.5	1362.6	12980.5	47765.6	50850.4	98416.7	4573.1	11353.8
1989	31	120.5	1860.7	101.5	192.2	1304.9	4650.1	5336.0	9852.0	121.9	1731.1

Table 1: Historical Estimates for Manufacturing Industries Before Revisions

Year	Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipment $million	New Capital Expenditure $million	End-of-Year Inventories $million
1989	32	519.9	12956.0	402.8	826.9	9140.2	34463.2	29379.4	63555.8	2874.6	7659.9
1989	33	726.9	22155.3	564.5	1204.5	15784.6	55540.6	97703.5	152967.7	5657.0	22516.6
1989	34	1468.5	37224.0	1089.0	2218.9	24315.2	80222.5	82696.7	162180.7	4612.8	24652.3
1989	35	1913.4	56247.4	1216.8	2488.3	29761.3	134335.0	122040.9	253641.7	8051.5	48728.3
1989	36	1550.9	42156.4	995.4	1960.2	20884.2	106195.7	86802.5	192292.2	8664.0	32229.0
1989	37	1805.3	62378.1	1184.1	2393.3	36471.7	153746.6	220940.9	365980.8	9967.0	70462.5
1989	38	967.5	30633.4	493.0	984.0	11817.1	78439.0	39692.8	118218.7	4427.4	24689.3
1989	39	385.7	7491.3	280.2	536.2	4370.0	19585.0	16502.1	35841.8	824.6	6147.1
1989	AUX	1246.0	56246.7	--	--	--	--	--	--	--	--
1990	20	1469.9	33469.6	1060.8	2138.9	21013.0	140972.9	243692.3	384008.9	8858.3	29373.4
1990	21	40.9	1516.4	29.5	57.4	1014.6	22561.2	7344.1	29922.5	277.8	6119.2
1990	22	632.5	11586.0	547.6	1117.8	8858.9	26541.3	39497.4	65951.4	2316.5	8430.1
1990	23	993.3	14111.2	844.9	1533.7	10034.8	33034.1	31377.7	64413.9	798.5	9042.3
1990	24	682.8	13496.4	570.6	1133.7	10067.1	28597.2	45916.9	74287.2	1874.8	8311.6
1990	25	499.3	9851.2	397.7	784.2	6606.1	21644.8	20150.2	41682.0	916.5	5865.3
1990	26	628.1	18945.8	479.9	1009.1	13045.0	59823.4	71879.0	131444.5	10809.1	13389.5
1990	27	1538.0	38806.8	817.7	1596.7	17420.6	103179.0	54063.4	157059.6	5812.4	11831.9
1990	28	853.3	30081.7	483.7	992.7	14294.3	153032.3	136808.8	288183.9	15202.4	33194.1
1990	29	111.8	4474.3	73.5	161.3	2696.6	27214.1	147403.1	172588.5	4158.2	13132.7
1990	30	870.0	20236.0	673.9	1352.2	13370.2	49888.9	51579.1	101398.2	4344.8	11773.7
1990	31	117.7	1888.2	98.5	181.4	1280.9	4586.5	5320.8	9887.3	114.5	1696.1
1990	32	509.0	13168.9	394.9	815.2	9251.5	34140.0	29588.3	63467.9	2729.2	8057.5
1990	33	711.6	22476.6	548.6	1145.8	15933.1	53366.8	93344.4	146517.3	5788.6	22276.4
1990	34	1438.8	37790.0	1060.9	2162.0	24395.0	79952.1	83101.1	163053.1	4744.8	24128.7
1990	35	1877.0	56424.0	1184.1	2420.4	29719.6	132165.9	123569.2	256344.7	8294.0	48022.8
1990	36	1497.3	42067.6	949.7	1889.2	20370.8	106983.9	87820.4	194848.1	9236.9	31700.1
1990	37	1773.7	62854.7	1153.7	2301.9	36186.0	146916.2	223465.1	367926.7	10578.9	75016.5

Table 1: Historical Estimates for Manufacturing Industries Before Revisions

Year	Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipment $million	New Capital Expenditure $million	End-of-Year Inventories $million
1990	38	948.4	31572.4	481.3	965.4	12012.4	81570.5	41472.4	123534.8	4292.0	24813.1
1990	39	386.3	7804.7	277.4	533.0	4495.9	20095.4	17209.9	37205.0	805.7	6313.8
1990	AUX	1260.9	59694.5	--	--	--	--	--	--	--	--
1991	20	1475.1	34577.7	1069.9	2155.2	21764.1	145335.8	242480.6	387600.8	9362.1	29762.1
1991	21	39.9	1519.9	28.7	53.4	996.1	24484.3	7551.4	32031.7	405.3	6492.6
1991	22	597.9	11374.7	515.2	1066.8	8617.0	26981.7	38987.3	65997.5	2109.6	8193.9
1991	23	959.6	14135.6	815.3	1492.5	10045.6	33432.1	31950.2	65345.2	723.4	9320.5
1991	24	630.3	12737.3	526.3	1052.4	9537.6	26994.8	43466.0	70569.1	1573.4	8012.8
1991	25	465.8	9489.2	368.6	718.8	6251.6	20668.9	19348.8	40027.2	728.8	5616.8
1991	26	620.5	19382.7	476.6	1001.3	13353.1	58280.7	70605.1	128824.1	9008.7	13428.2
1991	27	1487.9	38741.8	787.3	1540.4	17222.3	103770.8	52936.1	156684.7	5041.4	11395.5
1991	28	846.4	31001.6	476.8	987.1	14790.3	154792.7	138060.4	292385.5	16008.8	33510.2
1991	29	113.2	4729.4	73.3	160.5	2788.6	24023.6	132389.0	158076.4	5895.9	11300.4
1991	30	839.7	20298.2	647.1	1301.3	13309.0	50295.2	50082.7	100668.0	4215.1	11324.5
1991	31	106.2	1753.1	88.9	160.5	1192.5	4292.9	4817.7	9142.3	99.5	1453.6
1991	32	475.9	12612.2	362.7	754.1	8738.6	31839.1	27628.0	59611.0	2381.5	7820.6
1991	33	677.0	21640.2	516.2	1065.7	15176.8	46605.2	85367.0	133352.0	5878.7	20305.1
1991	34	1358.5	36826.8	995.2	2032.2	23580.3	76669.7	80126.8	157077.1	4071.4	22969.3
1991	35	1773.9	54982.6	1100.9	2242.2	28358.8	124235.6	118886.3	243479.9	7334.0	46540.3
1991	36	1427.0	41611.6	896.2	1810.1	19984.4	106669.0	89766.3	197879.5	8121.0	30648.4
1991	37	1633.5	60078.9	1056.1	2139.8	34631.8	151978.6	209737.0	364032.0	10647.0	72019.5
1991	38	901.3	31796.4	451.8	906.0	11672.6	82431.6	43099.6	126912.2	4489.6	23570.9
1991	39	362.9	7750.0	260.4	514.2	4400.5	19999.1	17250.1	37131.3	822.1	6257.9
1991	AUX	1269.1	61978.6	--	--	--	--	--	--	--	--
1992	20	1505.6	36791.6	1101.8	2246.1	23371.1	157269.8	250264.8	407202.2	9900.2	31387.2
1992	21	38.0	1524.3	27.0	51.3	996.0	27206.8	8016.0	35198.4	389.2	6870.8
1992	22	613.8	12327.8	526.6	1080.6	9287.7	29847.8	40899.6	70516.2	2223.8	8282.7

Table 1: Historical Estimates for Manufacturing Industries Before Revisions

Year	Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipment $million	New Capital Expenditure $million	End-of-Year Inventories $million
1992	23	985.4	15328.0	824.6	1514.0	10783.5	36467.7	35511.5	71600.2	950.1	9961.0
1992	24	658.0	13913.1	541.7	1092.4	10226.9	33275.8	48735.6	81837.6	1762.2	8007.4
1992	25	471.5	10218.4	372.8	747.7	6762.0	22866.9	21052.0	43874.4	812.8	5698.1
1992	26	626.2	20483.3	478.5	1018.3	14055.3	60135.2	73130.3	133098.7	7951.3	13835.5
1992	27	1500.0	41266.4	789.2	1564.2	18520.3	112896.0	53890.9	166816.4	5379.4	11809.0
1992	28	848.5	32500.3	479.0	1007.9	15394.4	164419.4	141792.3	305377.9	16388.4	35456.7
1992	29	114.4	4966.4	73.6	165.4	2922.7	23800.6	125872.2	149946.0	6539.1	10946.3
1992	30	906.9	23122.0	696.5	1412.4	14979.7	58658.8	55176.0	113613.6	4790.4	12438.2
1992	31	101.0	1796.9	82.7	155.0	1217.8	4506.3	5215.6	9662.7	133.1	1560.2
1992	32	468.7	13110.3	356.6	742.5	9029.4	34534.9	27912.3	62383.6	2454.7	7861.5
1992	33	661.3	22165.1	507.5	1065.1	15711.1	51919.4	85691.7	138218.6	5345.2	19940.8
1992	34	1371.3	39199.4	1000.7	2065.2	24770.5	84011.3	82939.2	167089.6	4450.4	23438.2
1992	35	1739.3	57223.1	1085.6	2225.9	29167.2	132773.3	124828.3	258549.5	8067.6	45756.6
1992	36	1440.3	44250.5	911.6	1835.8	21056.4	120747.6	95171.7	216253.5	8981.5	29778.1
1992	37	1647.7	62617.3	1079.9	2170.1	36451.5	158797.2	234490.9	399751.7	11045.5	63179.3
1992	38	908.4	33118.5	459.9	917.4	12212.4	89381.4	44661.4	134923.9	4618.8	23917.3
1992	39	365.6	8431.9	254.9	511.3	4670.1	22029.9	17644.2	39589.1	1047.5	6698.4
1992	AUX	1263.2	65447.5	--	--	--	--	--	--	--	--

Table 2: Revised Historical Estimates for Manufacturing Industries

Year	Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipment $million	New Capital Expenditure $million	End-of-Year Inventories $million
1987	20	1448.8	30267.2	1029.0	2019.2	18899.5	121608.7	208754.8	329725.4	7197.5	25305.3
1987	21	44.7	1485.6	32.6	61.4	1010.4	14263.8	6490.6	20757.0	464.3	5562.0
1987	22	672.1	11409.2	575.0	1175.5	8728.4	25660.0	37565.3	62786.5	2027.9	7642.9
1987	23	1080.8	13903.6	911.7	1616.0	9879.2	32515.5	32005.4	64243.0	736.3	8974.0
1987	24	698.4	12706.7	581.5	1151.1	9523.7	28664.4	41259.1	69746.5	1825.1	7229.9
1987	25	510.8	9082.4	410.0	804.8	6253.2	20310.3	17324.0	37461.9	895.1	5406.9
1987	26	611.1	16859.6	465.6	972.0	11776.0	50488.8	58753.1	108989.0	5752.4	11111.1
1987	27	1494.0	33440.1	797.1	1537.5	15658.9	90162.3	46372.1	136195.6	4908.3	9940.6
1987	28	814.2	25016.5	462.9	944.5	12312.6	120777.5	109230.9	229546.0	8710.5	26387.6
1987	29	115.8	3996.1	76.4	158.1	2458.8	18518.4	112776.7	130414.0	2340.6	9797.1
1987	30	831.0	17575.3	643.1	1283.0	11693.7	44418.0	42504.5	86603.2	3410.0	9982.3
1987	31	129.0	1830.5	109.0	205.9	1301.4	4377.9	4754.9	9082.4	100.8	1572.9
1987	32	523.6	12349.1	405.0	832.8	8794.6	33383.0	28143.0	61477.1	2417.4	7031.6
1987	33	701.0	19777.4	541.3	1114.2	14163.1	46120.9	74692.2	120248.3	3850.8	18976.3
1987	34	1458.1	34999.6	1077.8	2183.8	22781.4	74957.9	72668.6	147366.1	4816.5	22554.8
1987	35	1844.3	50553.0	1142.9	2313.8	26092.4	118187.7	99569.5	217669.8	6954.9	42277.8
1987	36	1564.7	38738.2	999.8	1959.3	19716.8	95815.3	76194.7	171286.2	6874.9	29088.2
1987	37	1817.1	58790.5	1244.2	2443.5	34825.6	137076.4	198854.1	332935.3	10779.8	55061.9
1987	38	982.0	28778.0	502.6	1003.6	11531.4	70974.5	37211.5	107324.9	3872.2	23013.1
1987	39	374.4	6884.3	271.6	520.8	4028.0	17452.7	14665.9	32012.0	712.1	5696.8
1987	AUX	1233.6	47201.7	–	–	–	–	–	–	–	–
1988	20	1473.8	31670.9	1053.2	2075.1	19805.6	129700.1	225358.9	354085.1	7650.6	27622.5
1988	21	44.7	1497.8	33.2	60.2	1005.5	17130.4	6693.2	23809.4	409.7	5475.4
1988	22	667.6	11557.5	570.2	1154.3	8821.1	26237.0	38709.5	64627.4	2261.1	8048.6
1988	23	1071.4	14415.8	898.7	1584.6	10137.4	32781.5	33044.6	65771.5	691.6	9353.6
1988	24	702.4	13332.1	582.9	1156.3	9947.7	29023.2	43322.3	72045.9	1771.5	7586.3
1988	25	507.7	9474.8	409.5	802.0	6541.7	20833.5	18489.4	39173.0	934.4	5713.5

Table 2: Revised Historical Estimates for Manufacturing Industries

Year	Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipment $million	New Capital Expenditure $million	End-of-Year Inventories $million
1988	26	619.9	17665.3	475.6	998.3	12328.6	57474.2	65961.1	122882.6	7259.9	12431.3
1988	27	1505.6	35255.3	803.3	1574.9	16385.9	94622.2	50735.7	144803.4	5109.5	11212.7
1988	28	835.1	26608.0	477.0	982.7	12984.8	139089.8	124316.3	261237.5	11005.6	29579.7
1988	29	115.5	4149.8	76.5	158.4	2526.9	25333.3	105509.4	131681.3	2625.6	9038.7
1988	30	871.5	19067.3	673.7	1350.1	12579.5	47342.4	48746.5	95484.3	3663.1	11314.3
1988	31	127.3	1876.4	107.5	200.7	1326.6	4473.0	5125.6	9549.9	97.4	1712.9
1988	32	522.4	12745.5	400.6	817.4	9030.5	34243.0	29156.1	63145.8	2269.1	7377.9
1988	33	729.4	21567.6	564.4	1186.1	15580.8	56863.0	95055.8	149836.5	4720.8	22375.9
1988	34	1494.7	37396.3	1108.4	2271.1	24327.5	80665.3	80364.1	159504.5	4195.3	24531.6
1988	35	1902.7	54465.1	1196.7	2439.4	28248.4	129874.1	117485.4	244364.6	6892.6	46686.8
1988	36	1585.2	41284.4	1013.7	1989.0	20782.2	103730.1	84868.5	187300.9	8058.3	30812.9
1988	37	1821.5	61458.5	1198.6	2457.3	36455.7	143514.3	216038.7	354848.5	7241.1	61627.8
1988	38	997.6	30343.3	512.2	1011.2	11983.6	77143.3	39296.4	116008.8	4013.7	24573.5
1988	39	393.7	7477.7	283.1	546.4	4347.3	19239.3	16223.4	35271.5	722.3	6223.1
1988	AUX	1230.8	51887.9	--	--	--	--	--	--	--	--
1989	20	1519.2	33591.8	1085.4	2149.8	20947.7	137157.0	243505.9	380161.1	8710.4	28927.4
1989	21	43.8	1500.8	32.6	58.9	1002.5	18933.9	6933.2	25875.2	401.0	5734.5
1989	22	656.6	11953.6	567.2	1146.3	9144.4	27379.0	40195.2	67264.3	2389.7	8349.1
1989	23	1029.0	14322.8	872.7	1558.2	10213.3	33157.8	32053.4	64880.3	867.7	9202.6
1989	24	684.2	13361.7	567.8	1126.9	9972.7	29672.6	44948.1	74409.6	2024.1	7702.3
1989	25	510.2	9806.8	409.0	798.1	6671.3	21360.3	20031.6	41317.1	1038.7	5804.5
1989	26	633.2	18499.6	486.0	1018.5	12896.8	61221.9	71303.4	131895.4	9578.6	13320.8
1989	27	1518.3	37130.8	815.1	1580.2	16927.5	98960.2	53331.9	151854.5	5962.2	11626.5
1989	28	867.4	29105.0	493.5	1004.0	13851.7	149009.4	135202.9	283195.8	13774.9	31533.7
1989	29	113.8	4253.8	74.6	162.9	2581.5	26573.9	120859.1	146486.9	3394.3	10559.1
1989	30	903.2	20413.5	696.8	1392.1	13373.1	49308.7	52052.3	101236.1	4775.6	11512.4
1989	31	118.7	1852.4	99.7	188.6	1302.8	4539.8	5218.7	9625.5	116.7	1715.7

Table 2: Revised Historical Estimates for Manufacturing Industries

Year	Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipment $million	New Capital Expenditure $million	End-of-Year Inventories $million
1989	32	519.1	12977.5	401.1	822.0	9155.2	34479.1	29546.1	63728.7	2924.5	7669.2
1989	33	742.6	22658.0	576.1	1228.7	16133.6	56751.0	99181.2	155716.8	5593.7	22831.4
1989	34	1486.7	37874.1	1100.8	2242.9	24702.1	82047.8	83620.0	164072.7	4635.9	24987.9
1989	35	1928.5	56780.2	1223.5	2500.1	29891.4	135496.7	123618.3	256213.6	8148.2	49198.7
1989	36	1578.2	42833.3	1012.2	1987.0	21078.0	107163.6	88068.2	194598.8	9028.8	32687.9
1989	37	1797.6	61822.9	1230.3	2409.7	36586.8	151797.9	224863.2	369675.0	9937.4	69186.9
1989	38	1006.7	31862.5	512.3	1022.9	12259.2	80415.8	40923.0	121522.8	4595.6	25699.3
1989	39	388.6	7677.9	279.0	536.2	4428.2	20007.3	16874.4	36645.8	839.7	6292.0
1989	AUX	1246.0	56246.7	–	–	–	–	–	–	–	–
1990	20	1497.0	34221.5	1083.8	2185.0	21563.7	143773.9	248747.4	391727.6	9331.9	30185.2
1990	21	40.9	1506.1	29.5	57.3	1006.3	22486.9	7351.8	29855.8	277.7	6121.2
1990	22	629.7	11596.2	543.7	1105.2	8828.3	26406.4	39200.2	65532.5	2371.6	8339.2
1990	23	1009.9	14524.4	857.2	1542.6	10322.4	34017.6	32683.3	66636.5	856.9	9176.3
1990	24	677.8	13444.2	564.1	1110.2	9974.6	28552.2	45955.6	74228.8	1993.7	8024.5
1990	25	494.4	9813.1	392.9	776.0	6579.5	21582.8	20049.9	41522.9	911.8	5847.0
1990	26	631.3	19065.1	480.3	1012.0	13127.4	60179.8	72514.6	132424.4	10956.9	13526.8
1990	27	1560.8	39471.9	830.6	1623.8	17780.7	104719.5	55221.0	159749.5	6116.5	12179.4
1990	28	869.0	30719.0	489.4	1006.3	14462.2	156665.2	137945.6	292802.7	15645.1	33816.6
1990	29	112.3	4497.2	73.4	161.8	2704.8	27374.6	148013.8	173388.8	4192.8	13184.2
1990	30	904.4	21187.2	696.0	1388.8	13841.1	52161.5	53191.1	105250.2	4658.4	12284.7
1990	31	115.0	1875.8	95.8	176.0	1277.8	4421.1	5144.9	9547.6	106.8	1673.1
1990	32	507.8	13201.2	392.4	807.8	9274.0	34163.9	29838.3	63727.3	2804.0	8071.5
1990	33	721.0	22783.5	555.7	1159.4	16152.6	54495.4	94512.5	148787.1	5941.4	22592.0
1990	34	1460.4	38558.2	1074.3	2189.5	24806.8	82268.7	84089.3	165064.5	4824.6	24585.0
1990	35	1888.9	56993.7	1186.5	2423.2	29789.2	133547.9	125448.2	259366.3	8394.7	48426.8
1990	36	1511.1	42605.3	953.5	1893.2	20449.2	107748.0	88384.3	195898.2	9494.5	31939.7
1990	37	1790.8	63282.6	1161.2	2317.9	36278.7	146958.8	225750.6	370329.4	10860.4	75649.3

Table 2: Revised Historical Estimates for Manufacturing Industries

Year	Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipment $million	New Capital Expenditure $million	End-of-Year Inventories $million
1990	38	983.0	32792.9	497.1	994.4	12406.1	84717.2	42806.3	127977.3	4450.1	25698.1
1990	39	390.7	8084.6	275.6	532.9	4583.2	20728.8	17768.3	38411.1	828.4	6531.2
1990	AUX	1260.9	59694.5	--	--	--	--	--	--	--	--
1991	20	1511.2	35580.2	1100.5	2216.6	22498.4	149070.5	249220.8	397892.4	9993.6	30844.5
1991	21	39.9	1506.1	28.7	53.3	985.0	24385.3	7561.7	31942.8	405.2	6495.3
1991	22	594.1	11388.3	509.9	1050.0	8576.2	26801.8	38591.1	65438.9	2183.1	8072.6
1991	23	981.7	14686.5	831.7	1504.4	10429.0	34743.4	33691.0	68308.7	801.3	9499.1
1991	24	623.6	12667.7	517.6	1021.1	9414.3	26934.8	43517.6	70491.2	1732.0	7630.0
1991	25	459.3	9438.4	362.2	707.9	6216.1	20586.2	19215.1	39815.1	722.5	5592.4
1991	26	624.7	19541.8	477.1	1005.2	13463.0	58755.9	71452.6	130130.6	9205.8	13611.2
1991	27	1518.3	39628.6	804.5	1576.5	17702.5	105824.8	54479.6	160271.2	5446.8	11858.8
1991	28	867.3	31851.3	484.4	1005.2	15014.1	159636.5	139576.2	298543.9	16599.0	34340.3
1991	29	113.9	4760.0	73.1	161.2	2799.6	24237.6	133203.3	159143.6	5942.0	11369.0
1991	30	885.6	21566.4	676.6	1350.1	13936.8	53325.3	52232.1	105803.9	4633.3	12005.8
1991	31	102.6	1736.6	85.3	153.3	1188.4	4072.4	4583.2	8689.4	89.2	1422.9
1991	32	474.3	12655.2	359.3	744.2	8768.7	31870.9	27961.3	59956.9	2481.2	7839.2
1991	33	689.6	22049.5	525.6	1083.9	15469.5	48110.0	86924.4	136378.4	6082.4	20725.9
1991	34	1387.2	37851.0	1013.0	2068.9	24129.3	79758.5	81444.4	159759.0	4177.8	23577.7
1991	35	1789.8	55742.2	1104.2	2245.9	28451.6	126078.2	121391.7	247508.7	7468.2	47079.0
1991	36	1445.4	42328.5	901.2	1815.4	20088.9	107687.8	90518.2	199279.6	8464.5	30967.8
1991	37	1656.3	60649.5	1066.1	2161.1	34755.3	152035.3	212784.4	367235.6	11022.3	72863.2
1991	38	947.5	33423.8	472.9	944.7	12197.5	86627.1	44878.2	132835.5	4700.4	24750.9
1991	39	368.8	8123.2	258.0	514.1	4517.0	20843.7	17994.6	38739.4	852.3	6547.7
1991	AUX	1269.1	61978.6	--	--	--	--	--	--	--	--
1992	20	1505.6	36791.6	1101.8	2246.1	23371.1	157269.8	250264.8	407202.2	9900.2	31387.2
1992	21	38.0	1524.3	27.0	51.3	996.0	27206.8	8016.0	35198.4	389.2	6870.8
1992	22	613.8	12327.8	526.6	1080.6	9287.7	29847.8	40899.6	70516.2	2223.8	8282.7

Table 2: Revised Historical Estimates for Manufacturing Industries

Year	Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipment $million	New Capital Expenditure $million	End-of-Year Inventories $million
1992	23	985.4	15328.0	824.6	1514.0	10783.5	36467.7	35511.5	71600.2	950.1	9961.0
1992	24	658.0	13913.1	541.7	1092.4	10226.9	33275.8	48735.6	81837.6	1762.2	8007.4
1992	25	471.5	10218.4	372.8	747.7	6762.0	22866.9	21052.0	43874.4	812.8	5698.1
1992	26	626.2	20483.3	478.5	1018.3	14055.3	60135.2	73130.3	133098.7	7951.3	13835.5
1992	27	1500.0	41266.4	789.2	1564.2	18520.3	112896.0	53890.9	166816.4	5379.4	11809.0
1992	28	848.5	32500.3	479.0	1007.9	15394.4	164419.4	141792.3	305377.9	16388.4	35456.7
1992	29	114.4	4966.4	73.6	165.4	2922.7	23800.6	125872.2	149946.0	6539.1	10946.3
1992	30	906.9	23122.0	696.5	1412.4	14979.7	58658.8	55176.0	113613.6	4790.4	12438.2
1992	31	101.0	1796.9	82.7	155.0	1217.8	4506.3	5215.6	9662.7	133.1	1560.2
1992	32	468.7	13110.3	356.6	742.5	9029.4	34534.9	27912.3	62383.6	2454.7	7861.5
1992	33	661.3	22165.1	507.5	1065.1	15711.1	51919.4	85691.7	138218.6	5345.2	19940.8
1992	34	1371.3	39199.4	1000.7	2065.2	24770.5	84011.3	82939.2	167089.6	4450.4	23438.2
1992	35	1739.3	57223.1	1085.6	2225.9	29167.2	132773.3	124828.3	258549.5	8067.6	45756.6
1992	36	1440.3	44250.5	911.6	1835.8	21056.4	120747.6	95171.7	216253.5	8981.5	29778.1
1992	37	1647.7	62617.3	1079.9	2170.1	36451.5	158797.2	234490.9	399751.7	11045.5	63179.3
1992	38	908.4	33118.5	459.9	917.4	12212.4	89381.4	44661.4	134923.9	4618.8	23917.3
1992	39	365.6	8431.9	254.9	511.3	4670.1	22029.9	17644.2	39589.1	1047.5	6698.4
1992	AUX	1263.2	65447.5	--	--	--	--	--	--	--	--

Table 3. Revisions in Estimates for 1989 For 1989 Reestimation Tabulation Industries

Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipments $million	New Capital Expenditure $million	End-of-Year Inventories $million
203	5.2	103.9	4.7	9.0	85.1	367.1	531.6	904.5	-66.3	235.9
205	10.2	229.3	3.6	5.9	105.0	494.2	323.0	820.4	-11.6	18.8
209	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20R	27.1	648.8	12.7	24.7	262.3	2395.8	6295.2	8887.1	143.1	421.0
211	-0.1	-0.4	0.0	0.0	-0.6	30.5	1.3	31.9	0.1	0.5
21R	0.7	13.2	0.5	1.1	9.7	30.6	50.7	84.8	1.7	26.1
223	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
227	0.5	7.5	0.0	0.2	-1.9	44.5	109.7	154.6	3.6	19.0
22R	5.3	102.7	3.9	6.9	65.6	56.5	-26.6	67.7	72.6	46.1
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
241	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
245	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
249	1.8	37.0	1.2	1.9	19.6	75.3	26.6	120.1	-9.2	12.3
24R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
251	2.1	33.6	1.6	0.7	19.2	-1.6	77.3	94.9	35.3	18.7
25R	3.2	60.9	3.0	4.3	51.5	71.2	129.2	175.8	20.4	31.6
262	0.5	17.8	0.4	0.4	7.6	-113.9	151.6	12.5	-471.8	10.2
267	-0.5	-31.5	0.1	-0.2	-14.1	-223.2	-107.7	-314.2	-145.6	4.1
26R	1.6	36.8	1.4	3.1	34.4	113.2	54.7	177.7	30.2	25.9
271	-0.7	43.5	0.5	1.6	31.2	117.5	34.1	149.5	-1.5	0.6
275	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
282	-1.6	-39.7	-1.3	-2.6	-26.8	-140.5	-284.9	-407.8	-26.6	-63.8

Table 3. Revisions in Estimates for 1989 For 1989 Reestimation Tabulation Industries

Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipments $million	New Capital Expenditure $million	End-of-Year Inventories $million
283	2.9	59.1	1.6	3.0	32.6	-60.2	209.0	147.6	40.9	72.7
284	2.9	62.0	2.8	4.3	61.9	544.3	167.5	752.6	-57.6	122.2
286	0.9	22.0	0.5	1.1	20.0	96.0	448.7	651.0	-26.0	52.1
28R	3.6	101.5	1.8	3.3	29.4	92.1	726.6	888.0	68.9	104.5
291	1.2	41.3	0.7	1.6	22.7	447.0	1746.7	2184.3	17.0	159.1
29R	0.7	15.8	0.4	1.5	9.6	-27.9	35.6	67.1	23.0	-7.9
301	0.3	12.0	0.3	0.7	8.5	15.7	21.3	40.3	18.8	-5.6
308	2.8	107.4	3.2	4.5	70.3	12.3	105.9	211.2	-25.5	-176.5
30R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
331	0.3	23.6	0.2	1.7	13.7	6.2	-83.3	-11.0	-147.0	-48.4
335	3.9	100.7	2.7	5.8	62.2	261.6	762.7	1051.5	7.8	109.7
33R	5.2	173.8	4.1	7.6	126.8	190.2	19.5	195.4	-26.1	43.2
344	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
346	3.9	143.6	3.0	5.9	115.2	240.0	256.8	501.3	-22.8	36.0
347	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
348	-0.1	-5.6	-0.1	-0.3	-2.8	40.9	7.7	49.8	-7.2	-4.6
349	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
352	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
354	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
356	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 3. Revisions in Estimates for 1989 For 1989 Reestimation Tabulation Industries

Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipments $million	New Capital Expenditure $million	End-of-Year Inventories $million
357	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
358	7.2	153.0	5.1	10.0	83.7	240.3	324.7	557.5	29.6	201.1
359	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
362	-0.9	-22.3	-0.4	0.2	-2.6	-202.3	-34.4	-202.8	6.7	-95.9
363	2.9	55.3	1.9	3.8	38.1	87.6	53.9	153.5	-30.6	38.2
364	1.5	31.1	0.8	2.3	9.3	-34.5	95.1	87.2	7.7	39.1
367	4.7	51.3	4.9	5.7	24.9	399.4	186.9	615.8	97.2	160.6
369	4.8	50.9	4.7	7.8	48.3	157.2	240.8	437.3	-6.2	49.3
36R	5.1	152.1	2.3	4.4	23.4	51.0	347.4	515.5	118.3	107.9
371	19.7	689.2	14.9	24.0	464.2	2424.7	3717.5	6051.6	-11.9	350.5
374	0.5	20.3	0.2	0.2	10.1	-17.8	20.7	-14.8	7.8	20.4
37R	-39.2	-1550.0	26.2	-18.6	-421.0	-4383.9	-1339.6	-3944.4	-213.2	-2068.3
381	9.4	263.2	4.6	9.0	105.1	297.4	283.8	587.6	44.6	354.3
384	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
386	0.7	25.5	0.7	1.8	16.5	0.6	-27.0	-5.8	-3.4	7.3
38R	6.0	126.6	3.5	8.8	58.1	-419.0	84.1	-239.4	21.7	58.4
39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 4. Cumulative Drift in 1992 for Drift Tabulation Industries

Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipment $million	New Capital Expenditure $million	End-of-Year Inventories $million
203	-2.2	-30.2	-2.4	-3.0	-14.7	-644.3	-529.8	-1303.4	-15.7	30.5
205	6.0	60.3	6.2	10.8	79.6	187.8	189.1	400.7	41.2	56.1
209	14.2	414.1	12.3	24.0	266.8	1317.3	1527.7	2802.8	157.7	227.8
20B	27.1	808.9	22.3	45.0	586.1	3807.5	7238.2	10964.4	606.1	1038.6
211	-0.5	-23.7	-0.3	-0.4	-17.1	-91.2	-30.3	-121.5	0.0	-10.7
21B	0.5	6.5	0.3	0.3	3.2	-32.6	43.2	10.4	-0.1	14.1
223	-0.8	-8.3	-0.8	-1.9	-5.1	-42.8	-56.3	-99.9	-9.2	-18.2
227	-0.2	6.5	8.7	-2.0	-1.7	-2.0	6.6	6.9	64.6	70.6
229	4.1	114.3	2.8	5.8	64.3	294.7	207.2	505.0	42.5	97.7
22B	-7.7	-95.5	-8.7	-24.9	-116.8	-483.6	-710.8	-1173.9	68.3	-222.7
23	27.7	688.6	20.4	14.8	479.3	1639.2	2176.0	3704.4	97.4	223.3
24	-8.4	-87.0	-10.9	-39.2	-154.2	-75.0	64.5	-97.3	198.2	-478.5
25	-8.2	-63.6	-8.0	-13.6	-44.4	-103.4	-167.1	-265.2	-7.9	-30.5
261	0.4	9.7	0.3	0.6	7.7	22.0	21.8	42.5	-7.0	5.5
262	0.1	7.4	-0.2	0.6	-2.6	-2.3	-11.4	-17.4	48.3	8.3
267	3.7	139.8	1.5	5.0	88.9	564.0	748.7	1288.2	111.0	116.0
26B	1.0	42.0	-1.0	-1.3	43.4	10.3	300.3	319.8	94.0	99.0
27	38.0	1108.5	21.5	45.1	600.2	2567.5	1929.4	4483.1	506.8	579.2
283	23.4	939.0	9.4	19.9	220.0	3930.6	1150.6	4991.9	461.5	634.4
28B	2.7	123.1	2.2	-2.0	2.7	59.7	2124.2	744.1	2706.1	276.3
291	2.1	76.6	1.1	2.5	33.4	231.2	995.1	1206.6	40.2	119.1
29B	-1.2	-38.4	-1.3	-1.7	-19.7	36.4	22.7	127.4	17.4	-33.3
301	-1.0	-28.4	-0.2	-0.4	-15.4	-28.8	-41.4	-75.8	10.6	-0.6

Table 4. Cumulative Drift in 1992 for Drift Tabulation Industries

Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipment $million	New Capital Expenditure $million	End-of-Year Inventories $million
308	50.5	1350.7	34.6	58.0	757.8	3454.6	2481.8	5887.2	465.6	773.7
30B	7.9	263.0	2.5	3.4	42.3	361.8	246.3	608.6	46.5	78.5
31	-4.5	-20.7	-4.5	-8.9	-5.2	-275.6	-293.2	-566.1	-12.9	-38.4
321	-0.3	-4.6	-0.2	-0.4	-4.0	-27.2	-15.1	-49.4	63.4	-4.3
322	-0.7	-13.3	-0.4	-0.6	-1.8	6.8	-68.2	-55.7	0.1	-39.7
32B	-1.0	71.7	-3.6	-11.3	43.4	60.2	500.0	537.4	61.2	67.3
331	3.6	125.7	2.3	5.6	88.6	494.3	704.0	1175.2	77.7	120.8
335	2.0	20.0	1.5	1.9	21.1	191.7	-78.5	139.6	56.0	27.2
33B	10.1	365.9	8.0	15.2	256.1	1195.1	1321.3	2468.3	120.9	378.0
344	24.9	758.3	16.5	31.8	422.7	1470.2	1847.1	3340.4	101.1	339.9
346	6.5	248.5	5.1	15.6	217.4	1600.8	-631.7	-1181.6	-144.9	136.0
34B	4.6	273.5	0.7	-1.5	46.2	790.0	431.5	1193.6	176.7	284.5
351	5.3	218.0	2.0	4.8	88.9	305.1	429.1	745.0	46.0	121.3
352	4.8	-2.0	52.1	7.4	-2.0	1.0	31.6	206.7	165.3	321.8
353	-4.6	-38.7	-0.3	0.7	3.2	191.4	120.9	251.5	24.1	192.5
354	-12.4	-223.1	-9.3	-22.1	-168.4	-818.7	-243.1	-1127.9	1.3	-64.3
355	5.9	65.3	0.6	-1.5	-69.8	493.7	479.9	931.1	63.3	202.4
356	-5.8	-161.2	-4.3	-5.5	-77.7	489.4	-239.9	137.2	-79.2	-32.7
357	7.9	366.8	-0.2	-0.4	-26.2	601.7	1546.7	2059.4	6.6	523.2
358	2.6	76.9	0.1	-0.3	-38.4	109.3	238.7	330.9	10.8	-39.9
359	21.0	593.5	15.2	28.0	372.7	724.8	634.3	1387.0	66.7	-208.8
363	-3.7	-130.6	-2.9	-4.6	-70.9	-326.6	-308.3	-646.1	-11.0	-46.1
364	-0.4	176.6	-3.0	1.8	72.7	126.8	9.9	130.3	-2.2	39.0

Table 4. Cumulative Drift in 1992 for Drift Tabulation Industries

Industry Code	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipment $million	New Capital Expenditure $million	End-of-Year Inventories $million
366	-7.1	-2.0	207.2	-2.5	-5.4	-37.3	236.3	17.5	172.0	38.6
367	22.0	655.1	9.0	16.1	159.9	1569.9	1457.2	2892.9	250.6	499.6
36B	5.1	-12.2	5.6	-1.3	6.3	-333.0	-236.4	-798.8	153.3	73.9
371	21.1	390.3	12.9	21.9	102.9	237.3	3729.7	3886.5	481.0	622.9
372	5.0	321.3	-0.4	5.4	114.6	284.5	524.7	871.3	-10.9	831.4
373	1.4	-8.9	1.4	1.6	-32.7	-124.4	271.7	144.9	12.5	64.3
374	5.1	129.7	3.7	7.1	87.6	262.7	301.6	574.7	-2.0	58.2
376	2.9	88.4	0.3	1.5	5.7	67.6	1.7	175.4	3.1	-321.4
37B	-6.9	-207.5	-5.5	-10.9	-123.7	-656.7	-1020.2	-1648.2	-14.5	-200.7
382	11.1	300.3	5.3	10.0	123.4	676.2	658.3	1311.8	-13.7	304.2
386	1.4	64.7	0.7	1.8	22.9	69.1	-50.1	27.4	16.6	-44.0
38B	45.3	1669.2	20.3	36.5	509.8	4499.1	1615.1	6065.0	260.7	1214.8
39	7.3	466.5	-2.9	-9.3	-2.0	145.6	1055.7	930.6	2010.1	37.8

Table 5: Annual Percentage Changes in Total Value of Shipments Before and After Revisions

Industry Code	1988 Before Revision	1988 After Revision	1989 Before Revision	1989 After Revision	1990 Before Revision	1990 After Revision	1991 Before Revision	1991 After Revision	1992 Before Revision	1992 After Revision
201	5.44	6.33	3.88	8.12	7.63	4.95	-1.53	-0.78	5.34	2.16
202	4.89	5.78	2.34	6.52	6.07	3.43	-2.18	-1.44	8.61	5.33
203	5.39	4.67	8.69	10.44	6.89	4.05	5.20	4.69	-0.87	1.39
204	11.45	12.40	9.60	14.06	3.71	1.12	1.23	2.00	6.24	3.04
205	2.02	2.36	3.76	7.47	4.21	1.21	1.60	1.89	7.39	6.11
206	3.99	4.87	2.77	6.96	4.26	1.66	4.34	5.13	3.43	0.31
207	29.19	30.29	-1.57	2.44	-3.44	-5.85	-3.92	-3.19	0.05	-2.97
208	5.06	5.95	0.83	4.94	4.12	1.52	4.62	5.41	6.10	2.89
209	3.37	5.30	-0.53	1.31	8.14	9.65	0.69	2.30	5.97	-0.85
211	15.58	15.44	8.70	8.75	16.94	16.70	6.22	6.15	9.72	10.11
212	5.27	5.33	2.08	4.31	11.66	9.37	35.55	35.59	-7.93	-8.08
213	6.34	6.40	10.56	12.97	12.50	10.19	8.68	8.71	0.42	0.25
214	13.83	13.89	4.03	6.29	9.52	7.28	11.53	11.56	18.27	18.07
221	2.83	2.30	-3.67	-4.01	-2.42	-3.05	6.95	6.47	2.10	4.13
222	5.14	4.60	2.69	2.32	-1.29	-1.93	-3.06	-3.50	5.75	7.86
223	83.53	81.62	7.26	6.29	-13.05	-14.30	0.34	-0.80	-10.64	-6.50
224	18.18	17.57	-7.04	-7.37	0.96	0.31	-0.96	-1.41	5.31	7.41
225	-2.27	-2.77	13.58	13.18	-2.81	-3.44	5.84	5.36	9.84	12.03
226	-6.23	-6.71	1.15	0.80	-5.62	-6.23	5.52	5.05	6.43	8.55
227	4.71	4.85	-0.35	1.29	-1.78	-3.10	-10.46	-10.28	9.38	8.70
228	0.42	-0.10	0.20	-0.15	2.26	1.60	1.06	0.61	5.49	7.59
229	8.88	10.46	9.08	10.51	-1.60	-0.38	-4.26	-2.79	9.36	3.52
231	10.69	11.95	-7.92	-6.83	-10.14	-9.16	-5.93	-4.95	-1.65	-5.92
232	-0.95	0.18	-1.34	-0.17	-1.43	-0.36	7.50	8.62	12.17	7.31
233	1.87	3.03	-5.42	-4.30	3.53	4.65	0.49	1.54	10.48	5.68
234	3.90	5.08	-13.35	-12.32	1.75	2.85	7.56	8.69	7.08	2.44
235	1.31	2.47	7.60	8.87	1.97	3.07	8.67	9.81	22.22	16.92
236	-2.13	-1.01	0.48	1.67	0.19	1.28	-3.21	-2.19	-11.72	-15.55
237	-3.67	-2.57	-1.15	0.02	-5.89	-4.87	-32.03	-31.32	-20.20	-23.66

Table 5: Annual Percentage Changes in Total Value of Shipments Before and After Revisions

Industry Code	1988 Before Revision	1988 After Revision	1989 Before Revision	1989 After Revision	1990 Before Revision	1990 After Revision	1991 Before Revision	1991 After Revision	1992 Before Revision	1992 After Revision
238	5.34	6.54	-6.68	-5.57	2.96	4.08	-0.57	0.47	3.49	-1.00
239	0.56	1.71	3.20	4.42	4.57	5.71	-1.12	-0.09	13.43	8.51
241	6.63	6.60	3.03	3.17	1.76	1.57	-6.50	-6.53	21.12	21.25
242	4.80	4.78	1.48	1.62	-2.48	-2.66	-2.64	-2.67	19.85	19.99
243	1.08	1.05	3.58	3.72	-1.82	-2.01	-7.73	-7.76	15.50	15.63
244	10.87	10.84	14.06	14.22	8.90	8.70	0.49	0.46	2.35	2.46
245	0.80	0.77	-3.05	-2.92	0.72	0.53	-8.03	-8.06	11.38	11.50
249	1.77	1.75	7.93	8.08	4.44	4.25	-1.00	-1.03	9.84	9.96
251	3.08	2.94	4.31	4.87	-0.21	-0.99	-2.08	-2.22	5.92	6.48
252	3.20	3.06	6.15	6.71	-2.75	-3.50	-9.56	-9.69	10.27	10.86
253	27.41	27.24	8.38	8.96	7.93	7.09	0.77	0.62	38.59	39.33
254	4.22	4.08	2.03	2.57	5.19	4.37	-4.26	-4.40	11.16	11.75
259	3.87	3.73	7.33	7.90	6.34	5.51	-5.28	-5.42	1.79	2.33
261	21.94	22.14	21.98	22.51	-2.76	-2.94	-14.58	-14.39	2.56	1.91
262	16.00	15.99	5.49	5.52	-0.18	-0.23	-5.60	-5.61	-1.67	-1.63
263	17.22	17.39	1.40	1.87	-2.45	-2.64	-5.69	-5.55	7.51	6.91
265	9.01	9.17	8.12	8.62	0.09	-0.10	0.22	0.37	6.56	5.96
267	9.12	9.83	8.36	8.17	1.62	2.94	2.55	3.08	3.51	1.17
271	3.38	4.02	3.70	4.40	1.45	1.87	-2.71	-2.16	1.25	-1.01
272	7.40	8.07	6.32	7.03	3.08	3.50	-0.25	0.31	8.40	5.97
273	7.94	8.61	4.53	5.23	8.58	9.03	6.61	7.22	3.29	0.98
274	4.42	5.07	-1.63	-0.98	10.64	11.10	10.00	10.62	12.45	9.93
275	5.97	6.63	6.01	6.72	5.15	5.58	-1.81	-1.25	8.64	6.21
276	5.20	5.85	-2.93	-2.28	3.37	3.79	-7.35	-6.83	2.80	0.50
277	5.86	6.52	11.93	12.67	7.87	8.32	2.40	2.98	10.12	7.66
278	4.81	5.46	0.51	1.18	5.85	6.29	0.48	1.05	11.77	9.27
279	7.74	8.41	-1.03	-0.37	6.38	6.82	-2.94	-2.39	10.65	8.17
281	11.81	12.09	9.26	10.40	10.49	9.83	-0.67	-0.44	3.20	2.24
282	18.45	18.75	4.43	5.52	-4.18	-4.75	-4.51	-4.28	4.58	3.61

Table 5: Annual Percentage Changes in Total Value of Shipments Before and After Revisions

Industry Code	1988 Before Revision	1988 After Revision	1989 Before Revision	1989 After Revision	1990 Before Revision	1990 After Revision	1991 Before Revision	1991 After Revision	1992 Before Revision	1992 After Revision
283	12.03	14.57	11.66	13.95	9.38	10.65	13.25	14.31	11.23	4.38
284	8.95	9.22	2.68	3.75	6.61	5.97	1.00	1.25	2.87	1.91
285	6.53	6.80	0.92	1.97	4.26	3.64	0.11	0.35	4.98	4.00
286	17.23	17.52	10.04	11.19	-0.45	-1.04	-1.92	-1.69	0.20	-0.73
287	12.68	12.97	7.06	8.18	6.36	5.73	1.17	1.42	1.76	0.82
289	5.93	6.20	4.36	5.45	6.05	5.41	0.34	0.58	4.21	3.25
291	0.54	0.75	10.40	12.42	21.51	19.63	-8.79	-8.60	-6.30	-6.91
295	2.33	2.54	-5.71	-5.01	4.31	3.93	-7.26	-7.05	7.21	6.35
299	3.95	4.16	8.11	8.91	6.87	6.48	1.37	1.59	9.19	8.32
301	7.79	7.65	3.92	4.15	1.55	1.07	0.18	0.06	-0.61	-0.10
302	4.58	5.39	3.76	4.50	7.51	8.23	16.45	17.36	14.61	11.30
305	13.35	14.23	1.51	2.23	4.16	4.86	-5.90	-5.17	13.65	10.36
306	7.06	7.88	4.80	5.55	2.11	2.80	-1.79	-1.02	10.72	7.52
308	8.89	10.79	4.76	6.71	3.29	4.49	-0.47	1.10	15.30	8.26
311	12.13	10.82	0.55	-0.60	-3.62	-4.74	-9.45	-10.87	33.08	40.01
313	-0.74	-1.90	11.59	10.32	15.13	13.79	-7.45	-8.91	-17.15	-12.83
314	4.55	3.32	0.10	-1.04	-0.70	-1.86	-10.81	-12.21	3.28	8.66
315	3.57	2.36	-22.31	-23.20	4.10	2.89	-8.85	-10.28	-2.98	2.08
316	2.98	1.78	17.21	15.87	4.30	3.09	-1.87	-3.42	-17.73	-13.45
317	3.87	2.66	-7.30	-8.35	0.54	-0.63	-0.62	-2.19	-1.78	3.34
319	14.05	12.72	17.78	16.44	7.64	6.39	2.07	0.46	-5.93	-1.03
321	-4.20	-4.59	1.43	1.03	-8.00	-8.46	-7.67	-8.21	-1.23	0.66
322	2.68	2.55	3.11	2.99	1.01	0.89	-1.83	-1.96	3.28	3.81
323	6.84	7.07	3.31	3.52	2.48	2.69	0.22	0.48	11.73	10.75
324	-2.33	-2.13	-2.48	-2.28	2.94	3.15	-11.13	-10.89	7.23	6.29
325	3.28	3.49	1.11	1.32	1.40	1.61	-9.87	-9.63	2.80	1.91
326	5.57	5.79	2.20	2.41	0.25	0.46	-2.10	-1.84	7.86	6.92
327	0.61	0.82	1.39	1.59	-1.29	-1.09	-8.66	-8.42	2.27	1.37
328	5.86	6.08	5.03	5.25	5.77	5.98	-3.29	-3.03	5.75	4.83

Table 5: Annual Percentage Changes in Total Value of Shipments Before and After Revisions

Industry Code	1988 Before Revision	1988 After Revision	1989 Before Revision	1989 After Revision	1990 Before Revision	1990 After Revision	1991 Before Revision	1991 After Revision	1992 Before Revision	1992 After Revision
329	7.49	7.71	-3.34	-3.14	-0.28	-0.07	-5.08	-4.83	6.69	5.76
331	23.63	24.08	0.41	0.76	-3.42	-3.02	-9.33	-8.85	3.76	2.06
332	13.54	14.77	1.77	3.23	-1.75	-1.04	-7.40	-6.00	6.33	1.42
333	46.46	48.05	3.27	4.75	-5.67	-4.98	-10.77	-9.42	0.42	-4.23
334	50.37	52.00	-0.26	1.18	-0.76	-0.04	-15.76	-14.48	12.02	6.83
335	18.98	19.07	6.21	8.93	-6.49	-8.69	-7.66	-7.57	1.87	1.56
336	14.92	16.17	4.96	6.47	-6.02	-5.33	-6.52	-5.10	4.00	-0.82
339	20.89	22.21	2.49	3.96	3.79	4.54	-7.75	-6.35	10.65	5.53
341	3.65	3.94	0.58	0.90	7.35	7.56	0.63	0.93	-2.90	-3.96
342	4.66	4.96	5.42	5.76	-1.40	-1.20	-2.13	-1.85	7.50	6.33
343	8.46	8.77	3.19	3.52	-0.26	-0.06	-2.79	-2.51	1.75	0.64
344	7.36	9.01	2.58	4.05	0.96	2.39	-5.31	-3.66	6.34	0.05
345	9.53	9.84	1.01	1.35	-0.08	0.12	-2.75	-2.46	6.38	5.22
346	5.36	4.53	3.00	3.91	-3.78	-6.17	-5.85	-6.81	10.00	13.85
347	18.00	18.33	0.19	0.52	2.53	2.74	-7.24	-6.97	13.09	11.86
348	4.95	5.24	-8.48	-8.18	-8.40	-8.21	-0.77	-0.48	4.56	3.42
349	12.00	12.32	3.26	3.60	4.60	4.81	-1.65	-1.36	6.04	4.88
351	11.34	12.36	4.36	5.23	-2.07	-1.17	0.17	1.04	6.38	2.70
352	18.18	18.74	10.59	11.01	9.73	10.08	-7.84	-7.36	-2.47	-4.09
353	12.70	12.90	6.48	6.65	3.89	4.04	-9.67	-9.46	-0.85	-1.56
354	10.73	9.71	9.51	8.67	1.32	0.48	-5.84	-6.85	4.42	8.25
355	12.09	13.18	9.34	10.21	1.45	2.30	-2.69	-1.76	3.21	-0.38
356	12.76	12.87	5.96	6.05	5.28	5.36	1.55	1.63	1.84	1.48
357	11.57	12.25	-3.28	-2.65	-2.07	-1.42	-8.30	-7.51	13.60	10.50
358	10.09	10.37	5.77	8.19	-3.10	-4.79	-4.40	-4.12	9.43	8.29
359	9.81	11.20	6.19	7.36	1.97	3.09	-2.03	-0.83	8.22	3.28
361	10.98	10.68	3.33	3.78	3.49	2.48	-4.65	-4.91	3.75	4.89
362	10.17	9.86	6.75	7.22	1.13	0.14	-2.23	-2.49	6.65	7.82
363	5.06	4.28	5.78	5.97	-1.45	-3.01	-2.09	-2.86	4.47	7.61

Table 5: Annual Percentage Changes in Total Value of Shipments Before and After Revisions

Industry Code	1988 Before Revision	1988 After Revision	1989 Before Revision	1989 After Revision	1990 Before Revision	1990 After Revision	1991 Before Revision	1991 After Revision	1992 Before Revision	1992 After Revision
364	6.84	6.99	1.36	1.95	-0.90	-1.21	-6.17	-6.01	9.19	8.57
365	6.74	6.44	8.79	9.27	3.09	2.08	4.76	4.48	8.10	9.29
366	6.15	6.25	-2.70	-1.67	9.49	8.53	-1.32	-1.22	13.04	12.63
367	13.41	14.57	5.11	7.14	1.55	1.45	7.21	7.94	13.22	9.34
369	8.40	8.10	-0.16	0.28	-9.05	-9.94	5.40	5.12	0.10	1.19
371	7.60	7.98	1.83	4.89	-4.73	-6.83	-4.12	-3.72	15.96	14.24
372	2.91	3.13	5.57	2.71	12.69	16.21	8.18	8.32	2.35	1.66
373	6.29	6.50	4.42	1.59	3.08	6.33	-8.38	-8.16	4.81	3.98
374	32.98	37.64	34.78	36.54	5.98	8.50	-5.20	-2.56	3.31	-6.37
375	-0.55	-5.43	29.60	19.63	7.75	5.95	29.69	24.23	-1.88	18.68
376	7.26	7.39	4.63	1.71	3.58	6.78	-5.20	-5.07	-6.53	-6.98
379	-6.26	-10.86	0.79	-6.97	0.80	-0.88	-0.83	-5.00	26.44	52.93
381	0.91	2.79	-3.55	-1.02	4.07	4.65	-1.42	-0.01	-2.57	-8.62
382	10.65	11.66	2.82	2.96	6.17	7.70	2.56	3.32	6.74	3.38
384	10.78	12.84	7.32	10.14	13.80	14.43	8.60	10.16	17.72	10.41
385	15.18	17.32	12.73	15.69	3.70	4.28	1.68	3.14	16.39	9.16
386	6.78	6.81	10.67	10.66	-7.56	-7.51	1.81	1.83	3.51	3.41
387	6.07	8.04	-8.83	-6.44	-5.27	-4.74	1.04	2.48	-28.18	-32.64
391	3.87	5.06	2.48	3.58	-2.67	-1.72	-8.33	-7.36	8.54	4.04
393	7.58	8.82	-6.98	-5.97	7.14	8.19	0.96	2.03	11.35	6.72
394	13.32	14.62	6.67	7.82	3.84	4.86	2.71	3.79	5.83	1.43
395	13.59	14.90	10.63	11.83	3.87	4.88	-0.12	0.93	3.11	-1.17
396	1.24	2.41	-4.15	-3.12	11.10	12.18	-0.90	0.15	4.98	0.63
399	8.48	9.74	0.04	1.12	5.33	6.36	0.87	1.93	7.32	2.86
AUX	na	na	na	na	na	na	na	na	na	na

Appendix. Procedure for Reestimating 1989 GS Variables

This documentation describes how 1989 estimates were derived using a link-relative estimator.[5]

Data

Two files that are maintained by the Center for Economic Studies (CES) were used:

1. 1987 census of manufactures data (368,892 records).

2. 1989 ASM data (57,250 records). CES had removed about 20 CFN duplicates and replaced 266 PPNs that were all zeroes with valid PPNs, mostly from the 1990 ASM.

There were 50,384 matches (on PPN) between these files. The matched file was adjusted as follows:

1. Four records that were central administrative offices in the census but classified in manufacturing (erroneously) in the 1989 ASM were deleted.

2. 1,213 records that had a 1989 ASM sampling weight of 0 were deleted. They were in the file so that CES could maintain longitudinal data for them. They were not intended to be included in any ASM estimates.

3. 766 pre-1989 deaths were deleted. We assumed they balanced out births that had no data in 1987, which were automatically excluded when the files were matched.

4. 17 outgoing intercensus transfers (establishments whose industry code changed to nonmanufacturing by 1989) were deleted. We assumed they balanced out incoming ICT's, which were automatically excluded when the files were matched.

5. For 840 certainty establishments that changed their three-digit-SIC from 1987 to 1989, two records were created from the original one record:

   a. A death for the 1987 three-digit-SIC.

   b. A birth for the 1989 three-digit-SIC.

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[5] This appendix draws heavily on US Bureau of the Census, The Annual Survey of Manufactures: A Report on Methodology, by Jack L. Ogus and Donald F. Clark, Technical Paper No. 24, US Government Printing Office, Washington, DC, 1971. Results of a Census are treated as constants.

6. 277 noncertainty establishments whose three-digit-SIC changed from 1987 to 1989 were deleted. This change does not occur under ASM processing procedures.

7. 253 establishments with miscellaneous SIC or data problems identified by analysts were deleted.

These changes yielded a file of 48,694 records. It was used to compute link relatives, as described below.

A file of published Census and ASM figures, at the four-digit-SIC level was available. This was summarized to the 140 three-digit levels to obtain published values for 1987 and 1989.

Computation of Link Relatives

For each year (1989 and 1987), the CB computed the ASM "reciprocal" estimate of total for 10 general statistics items (denoted Y below), using 1989 weights for both years:

$$\hat{Y} = \sum_{h=1}^{n} Y_h W_h$$

where Y_h is the value of an item for establishment h and W_h is the weight for the establishment. The summation is for the n sample establishments in a particular three-digit SIC. Since the ASM sample is selected by Poisson sampling, this has estimated variance

$$\hat{Var}(\hat{Y}) = \sum_{h=1}^{n} W_h(W_h - 1)Y_h^2$$

The estimated link relative for an item in a three-digit SIC is

$$\hat{R} = \frac{\hat{Y}_{89}}{\hat{Y}_{87}}$$

with estimated variance

$$\hat{Var}(\hat{R}) = \frac{\hat{Var}(\hat{Y}_{89}) + \hat{R}^2\hat{Var}(\hat{Y}_{87}) - 2\hat{R}\rho\sqrt{\hat{Var}(\hat{Y}_{89})\hat{Var}(\hat{Y}_{87})}}{\hat{Y}_{87}^2}$$

where ρ is the Pearson product-moment correlation coefficient between 1989 and 1987 unweighted values. For simplicity, the CB computed one coefficient for each item, across all 3-digit SICs.

Finally, 1989 link-relative estimates for each item at the 3-digit SIC level were derived:

$$\hat{Y}_{R,89} = \hat{R} Y_{PUB,87}$$

This is the product of the estimated ratio and the published 1987 census value. This has estimated variance

$$\hat{Var}(\hat{Y}_{R,89}) = \hat{Var}(\hat{R}) Y^2_{PUB,87}$$

Appendix Table 1. Reestimated Levels for 1989 for Industries that were Reestimated

Industry	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipments $million	New Capital Expenditures $million	End-of-Year Inventories $million
203	217.9	4280.8	181.1	347.6	3145.5	19625.9	23007.4	42532.1	1154.4	7528.2
205	224.1	5264.2	129.3	253.0	2802.6	15795.8	10128.3	25886.4	739.2	922.2
20R	903.7	20592.7	645.4	1306.2	12826.5	86793.0	190089.0	276658.0	5833.6	17381.4
211	29.5	1212.0	22.1	39.1	831.4	17270.6	4584.9	21857.0	288.5	5167.1
21R	14.3	295.7	10.5	19.8	176.7	1712.9	2343.1	4062.7	112.6	566.0
227	55.0	1112.1	43.4	94.2	747.0	3270.2	7182.2	10374.6	213.7	1335.2
22R	586.3	10517.1	511.6	1030.4	8171.5	23540.9	31806.6	55100.6	2099.7	6759.9
249	92.7	1679.6	74.5	148.8	1184.0	3982.6	5261.7	9270.6	258.0	1172.9
251	281.6	4720.2	237.8	459.1	3437.9	9856.5	10202.1	20049.7	449.5	2983.0
25R	231.9	5112.0	174.4	344.4	3251.1	11545.2	9896.4	21373.5	592.3	2833.7
262	130.6	4944.9	101.0	214.4	3637.0	16986.7	18632.6	35399.6	4764.9	3345.2
267	229.5	5733.5	176.0	362.0	3914.1	20176.3	22415.1	42448.1	1369.7	4777.7
26R	271.0	7741.7	208.8	440.1	5290.6	23821.3	29832.0	53394.5	3345.5	5106.4
271	430.2	9885.8	147.9	255.4	3030.6	26047.2	8252.5	34295.3	1983.0	881.2
282	129.7	4585.0	87.5	184.5	2746.8	21148.9	29078.3	50122.4	3000.6	5129.7
283	186.7	6532.8	84.4	164.0	2203.0	34297.5	15172.2	49261.5	2433.1	6127.5
284	131.7	3638.0	82.2	156.5	1774.4	23998.7	15787.6	39621.8	922.5	4380.9
286	124.3	4906.3	74.9	160.0	2696.9	29516.6	37248.4	66644.3	4067.8	7218.0
291	73.6	3025.4	48.6	106.2	1881.3	22027.1	112268.3	133376.6	3004.0	9377.2
301	68.3	2351.6	54.9	109.2	1806.2	6105.0	5639.2	11720.6	803.5	1083.2
308	636.7	13482.3	494.6	989.1	8702.8	33302.4	37395.5	70654.8	3162.5	8009.9
331	261.1	9174.7	202.8	461.8	6757.8	25074.8	39669.6	64312.5	2854.2	11109.0
335	167.7	4800.2	125.4	261.0	3216.6	11738.6	30964.0	43110.6	1244.8	6685.4
33R	307.5	8478.5	243.3	496.8	6012.9	19185.2	27768.8	46780.5	1392.7	4826.7
346	260.8	7785.6	206.2	421.5	5730.3	14305.4	17110.7	31329.9	1320.7	3743.0
348	76.9	2283.2	46.8	89.8	1159.1	5158.6	2350.0	7391.4	107.2	1382.4
358	199.5	5298.8	143.4	287.7	3288.4	13280.4	14731.7	27613.2	732.5	4587.0
362	165.0	4117.8	113.7	223.2	2292.4	9802.3	7927.7	17752.2	541.0	3216.2
363	117.2	2728.5	93.7	182.8	1992.7	8261.1	10466.2	18488.1	454.7	3006.7
364	164.7	3929.1	119.8	240.5	2442.3	10775.1	8785.4	19585.4	534.2	3105.1
367	555.7	15212.6	343.7	673.1	6675.0	37356.9	23689.8	60529.2	4630.1	9801.7
369	183.7	4904.3	123.9	241.9	2760.5	11473.1	11814.5	23414.8	805.7	3736.8
36R	382.7	11582.6	214.9	422.9	4862.7	28985.6	25008.6	54129.0	1891.4	9661.7
371	743.5	25678.8	606.0	1236.3	20054.5	79287.0	152267.1	231677.5	5512.5	12182.0
374	27.9	861.1	19.8	40.6	545.3	1922.7	2582.8	4413.8	75.2	964.2
37R	1014.9	34997.7	599.6	1122.1	15925.2	70559.9	68489.6	131981.9	4162.0	55618.9
381	348.9	12708.5	145.4	285.7	4252.4	24221.9	11158.5	35883.0	1411.5	9508.2
386	87.7	3159.8	44.6	98.7	1315.9	15804.8	6908.4	22732.0	1004.8	2746.7
38R	324.6	9294.9	178.8	359.8	3877.7	20668.4	12237.2	32763.1	1172.6	7587.3

Appendix Table 2. Standard Errors of Reestimated Levels for 1989 for Industries that were Reestimated

Industry	Employment thousand	Payroll $million	Production Employment thousand	Production Hours million	Production Wages $million	Value Added $million	Cost of Materials $million	Total Value of Shipments $million	New Capital Expenditures $million	End-of-Year Inventories $million
203	1.8	28.7	1.6	3.7	21.9	151.3	139.8	229.6	31.5	91.3
205	1.8	31.2	1.2	2.9	19.2	98.6	68.8	132.6	28.9	10.6
20R	4.5	61.4	3.3	6.1	32.2	262.6	406.2	526.6	67.1	80.1
211	0.0	1.2	0.0	0.1	0.9	8.9	2.7	9.2	0.7	1.6
21R	0.4	6.4	0.3	0.7	4.7	50.9	30.6	61.9	5.5	12.0
227	0.8	15.0	0.7	1.6	9.8	43.0	35.1	60.7	8.0	12.1
22R	4.1	55.8	3.7	8.3	43.2	155.0	152.0	241.3	31.1	60.7
249	3.2	37.9	2.8	4.6	24.7	116.6	195.3	265.5	15.3	54.7
251	3.0	40.5	2.6	6.1	31.7	118.3	108.5	178.7	91.6	46.2
25R	3.2	56.0	2.4	5.6	36.9	166.5	112.0	211.5	24.7	48.3
262	0.5	15.2	0.4	1.1	11.8	68.9	69.7	112.1	194.5	15.2
267	1.9	37.3	1.5	3.8	24.3	115.2	130.1	195.0	36.3	44.7
26R	2.1	39.7	1.7	3.8	27.1	114.3	117.4	185.2	30.3	39.2
271	4.9	71.5	2.0	4.5	27.6	234.1	55.5	221.9	54.7	10.5
282	1.0	24.6	0.9	1.9	20.9	62.6	74.9	108.0	38.8	23.8
283	1.6	29.9	1.0	2.2	14.8	110.2	77.3	136.4	25.2	51.0
284	2.9	51.1	2.3	3.7	29.0	213.4	131.9	284.8	36.0	48.1
286	0.8	20.6	0.5	1.1	10.6	120.8	96.0	166.4	36.9	34.7
291	0.7	10.1	0.4	0.9	9.5	24.4	32.1	38.7	18.7	6.0
301	0.2	3.5	0.2	0.3	2.6	13.0	10.6	19.4	1.7	4.5
308	3.2	55.7	2.6	6.1	39.3	176.9	163.6	279.6	52.6	46.7
331	0.7	16.3	0.6	1.4	11.7	56.6	73.6	103.0	31.0	33.3
335	1.4	35.8	1.1	2.5	22.6	100.7	154.9	210.5	21.9	44.6
33R	2.5	52.3	2.1	4.9	37.5	143.3	158.9	227.9	32.6	40.1
346	2.1	42.9	1.6	3.9	31.0	127.2	119.1	195.2	33.5	39.9
348	0.6	9.4	0.6	1.4	7.3	26.1	17.1	31.5	7.6	8.6
358	1.9	42.6	1.4	3.5	34.7	182.0	95.3	191.0	15.6	95.3
362	1.9	36.6	1.4	3.2	20.6	106.9	83.4	142.6	15.1	45.8
363	1.9	21.2	1.8	2.3	20.8	111.7	46.7	126.7	5.8	31.6
364	1.5	27.9	1.1	2.7	17.4	100.0	69.4	130.9	12.1	42.4
367	3.4	52.2	2.8	5.6	32.0	142.4	87.1	174.6	38.9	69.0
369	2.2	39.5	1.8	4.1	31.0	105.0	74.3	140.7	11.1	43.5
36R	1.6	39.4	1.0	2.6	17.5	114.4	78.3	152.5	16.8	49.7
371	2.5	40.4	2.2	5.0	32.3	131.1	127.8	202.5	27.4	65.2
374	0.5	10.5	0.5	1.0	8.7	38.6	32.9	56.7	4.1	19.8
37R	3.3	72.4	2.8	6.2	53.4	200.0	241.8	319.3	23.4	172.7
381	1.2	25.1	0.8	1.8	15.1	102.3	33.2	100.5	8.0	51.6
386	0.7	11.3	0.6	1.2	7.1	39.8	43.5	61.2	20.1	19.0
38R	2.8	59.5	2.0	4.8	32.6	171.1	81.0	193.5	29.5	82.7

Attachment 1. Tabulation Industries for 1989 Reestimation

203* Preserved fruits and vegetables
205* Bakery products
209 Miscellaneous food & kindred products
20R* Residual of Food and kindred products
211* Cigarettes
21R* Residual of Tobacco products
223 Broad woven fabric mills, wool
227* Carpets and rugs
22R* Residual of Textile mill products
23 Apparel and other textile products
241 Logging
245 Wood buildings and mobile homes
249* Miscellaneous wood products
24R Residual of Lumber and wood products
251* Household furniture
25R* Residual of Furniture and fixtures
262* Paper mills
267* Miscellaneous converted paper products
26R* Residual of Paper and allied products
271* Newspapers
275 Commercial Printing
27R Residual of Printing and publishing
282* Plastics materials and synthetics
283* Drugs
284* Soaps, cleaners, and toilet goods
286* Industrial organic chemicals
28R Residual of Chemicals and allied products
291* Petroleum refining
29R Residual of Petroleum and coal products
301* Tires and inner tubes
308* Miscellaneous plastics products, n.e.c.
30R Residual of Rubber and miscellaneous plastics products
31 Leather and leather products
32 Stone, clay, and glass products
331* Blast furnace & basic steel products
335* Nonferrous rolling and drawing
33R* Residual of Primary metal industries
344 Fabricated structural metal products
346* Metal forgings and stampings
347 Metal services, n.e.c.
348* Ordnance and accessories, n.e.c.
349 Miscellaneous fabricated metal products
34R Residual of Fabricated metal products

Attachment 1. Tabulation Industries for 1989
Reestimation continued

352 Farm and garden machinery
354 Metalworking machinery
356 General industrial machinery
357 Computer and office equipment
358* Refrigeration & service machinery
359 Industrial machinery, n.e.c.
35R Residual of Industrial machinery and equipment
362* Electrical industrial apparatus
363* Household appliances
364* Electric lighting & wiring equipment
367* Electronic components & accessories
369* Miscellaneous electrical equipment and supplies
36R* Residual of Electronic and other electric equipment
371* Motor vehicles and equipment
374* Railroad equipment
37R* Residual of Transportation equipment
381* Search and navigation equipment
384 Medical instruments and supplies
386* Photographic equipment & supplies
38R* Residual of Instruments and related products
39 Miscellaneous manufacturing industries

*Indicates Industries That Were Reestimated

Attachment 2. Tabulation Industries for Drift Calculation and Distribution Across Earlier Years

203	Preserved fruits and vegetables
205	Bakery products
209	Miscellaneous food & kindred products
20B	Residual of Food and kindred products
211*	Cigarettes
21B*	Residual of Tobacco products
223	Broad woven fabric mills, wool
227	Carpets and rugs
229	Miscellaneous textile goods
22B	Residual of Textile mill products
23	Apparel and other textile products
24	Lumber and wood products
25	Furniture and fixtures
261*	Pulp mills
262*	Paper mills
267	Miscellaneous converted paper products
26B	Residual of Paper and allied products
27	Printing and publishing
283	Drugs
28	Residual of Chemicals and allied products
291*	Petroleum refining
29B	Residual of Petroleum and coal products
301*	Tires and inner tubes
308	Miscellaneous plastics products, n.e.c.
30B	Residual of Rubber and miscellaneous plastics products
31	Leather and leather products
321*	Flat glass
322*	Glass & glassware, pressed or blown
32B	Residual of Stone, clay, and glass products
331	Blast furnace & basic steel products
335	Nonferrous rolling and drawing
33B	Residual of Primary metal industries
344	Fabricated structural metal products
346	Metal forgings and stampings
34B	Residual of Fabricated metal products
351	Engines and turbines
352	Farm and garden machinery
353	Construction and related machinery
354	Metalworking machinery
355	Special industry machinery
356	General industrial machinery
357	Computer and office equipment
358	Refrigeration & service machinery
359	Industrial machinery, n.e.c.

Attachment 2. Tabulation Industries for Drift Calculation and Distribution continued

363	Household appliances
364	Electric lighting & wiring equipment
366	Communications equipment
367	Electronic components & accessories
36B	Residual of Electronic and other electric equipment
371	Motor vehicles and equipment
372*	Aircraft and parts
373	Ship & boat building & repairing
374	Railroad equipment
376*	Guided missiles, space vehicles, parts
37B	Residual of Transportation equipment
382	Measuring and controlling devices
386	Photographic equipment & supplies
38B	Residual of Instruments and related products
39	Miscellaneous manufacturing industries

* Indicates an industry in which the inventory adjustment of the "1992 ASM" tabulation was not performed.

Attachment 3. Two- And Three-digit Industry Codes and Names

Code	Name
20	Food and kindred products
21	Tobacco products
22	Textile mill products
23	Apparel and other textile products
24	Lumber and wood products
25	Furniture and fixtures
26	Paper and allied products
27	Printing and publishing
28	Chemicals and allied products
29	Petroleum and coal products
30	Rubber and misc. plastics products
31	Leather and leather products
32	Stone, clay, and glass products
33	Primary metal industries
34	Fabricated metal products
35	Industrial machinery and equipment
36	Electronic and other electric equip
37	Transportation equipment
38	Instruments and related products
39	Miscellaneous manufacturing industry
AUX	Auxiliaries
201	Meat products
202	Dairy products
203	Preserved fruits and vegetables
204	Grain mill products
205	Bakery products
206	Sugar and confectionery products
207	Fats and oils
208	Beverages
209	Misc. food & kindred products
211	Cigarettes
212	Cigars
213	Chewing and smoking tobacco
214	Tobacco stemming and re-drying
221	Broad woven fabric mills, cotton
222	Broad woven fabric mills, manmade fiber & silk
223	Broad woven fabric mills, wool
224	Narrow fabric mills
225	Knitting mills
226	Textile finishing, except wool
227	Carpets and rugs
228	Yarn and thread mills
229	Miscellaneous textile goods

Attachment 3. Three-digit Industry Codes and Names continued

Code	Name
231	Men's and boys' suits and coats
232	Men's and boys' furnishings
233	Women's and children's outerwear
234	Women's & children's undergarments
235	Hats, caps, and millinery
236	Girls' and children's outerwear
237	Fur goods
238	Misc. apparel and accessories
239	Misc. fabricated textile products
241	Logging
242	Sawmills and planing mills
243	Millwork, plywood, & structural members
244	Wood containers
245	Wood buildings and mobile homes
249	Miscellaneous wood products
251	Household furniture
252	Office furniture
253	Public building & related furniture
254	Partitions and fixtures
259	Miscellaneous furniture & fixtures
261	Pulp mills
262	Paper mills
263	Paperboard mills
265	Paperboard containers and boxes
267	Misc. converted paper products
271	Newspapers
272	Periodicals
273	Books
274	Miscellaneous Publishing
275	Commercial Printing
276	Manifold business forms
277	Greeting cards
278	Blank books and bookbinding
279	Printing trade services
281	Industrial inorganic chemicals
282	Plastics materials and synthetics
283	Drugs
284	Soaps, cleaners, and toilet goods
285	Paints and allied products
286	Industrial organic chemicals
287	Agricultural chemicals
289	Miscellaneous chemical products
291	Petroleum refining
295	Asphalt paving & roofing materials
299	Misc. petroleum & coal products

Attachment 3. Three-digit Industry Codes and Names continued

Code	Name
301	Tires and inner tubes
302	Rubber and plastics footwear
305	Hose & belting & gaskets & packing
306	Fabricated rubber products, n.e.c.
308	Misc. plastics products, n.e.c.
311	Leather tanning and finishing
313	Footwear cut stock
314	Footwear, except rubber
315	Leather gloves and mittens
316	Luggage
317	Handbags & personal leather goods
319	Leather goods, n.e.c.
321	Flat glass
322	Glass & glassware, pressed or blown
323	Products of purchased glass
324	Cement, hydraulic
325	Structural clay products
326	Pottery and related products
327	Concrete, gypsum, & plaster prods
328	Cut stone and stone products
329	Misc. nonmetallic mineral products
331	Blast furnace & basic steel prods
332	Iron and steel foundries
333	Primary nonferrous metals
334	Secondary nonferrous metals
335	Nonferrous rolling and drawing
336	Nonferrous foundries (castings)
339	Miscellaneous primary metal prods
341	Metal cans and shipping containers
342	Cutlery, hand tools, and hardware
343	Plumbing and heating, excluding electrical
344	Fabricated structural metal prods
345	Screw machine products, bolts, etc.
346	Metal forgings and stampings
347	Metal services, n.e.c.
348	Ordnance and accessories, n.e.c.
349	Misc. fabricated metal products
351	Engines and turbines
352	Farm and garden machinery
353	Construction and related machinery
354	Metalworking machinery
355	Special industry machinery
356	General industrial machinery
357	Computer and office equipment
358	Refrigeration & service machinery
359	Industrial machinery, n.e.c.

Attachment 3. Three-digit Industry Codes and Names continued

Code	Name
361	Electric distribution equipment
362	Electrical industrial apparatus
363	Household appliances
364	Electric lighting & wiring equip.
365	Household audio & video equipment
366	Communications equipment
367	Electronic components & accessories
369	Misc. electrical equip and supplies
371	Motor vehicles and equipment
372	Aircraft and parts
373	Ship & boat building & repairing
374	Railroad equipment
375	Motorcycles, bicycles, and parts
376	Guided missiles, space vehicles, parts
379	Miscellaneous transportation equip
381	Search and navigation equipment
382	Measuring and controlling devices
384	Medical instruments and supplies
385	Ophthalmic goods
386	Photographic equipment & supplies
387	Watches, clocks, watch cases, parts
391	Jewelry, silverware, & plated ware
393	Musical instruments
394	Toys and sporting goods
395	Pens, pencils, office, & art supplies
396	Costume jewelry and notions
399	Miscellaneous manufactures