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Estimates of Emergency Operating Capacity in U.S. Manufacturing Industries: 1994-2005

D. B. Belzer

February 1997

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Prepared for the Federal Emergency
Management Agency
under a Related Services Agreement
with the U.S. Department of Energy
under Contract DE-AC06-76RLO 1830

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Summary

To develop integrated policies for mobilization preparedness, planners require estimates and projections of available productive capacity during national emergency conditions. This report develops projections of national emergency operating capacity (EOC) for 458 U.S. manufacturing industries at the 4-digit Standard Industrial Classification (SIC) level. These measures are intended for use in planning models that are designed to predict the demands for detailed industry sectors that would occur under conditions such as a military mobilization or a major national disaster.

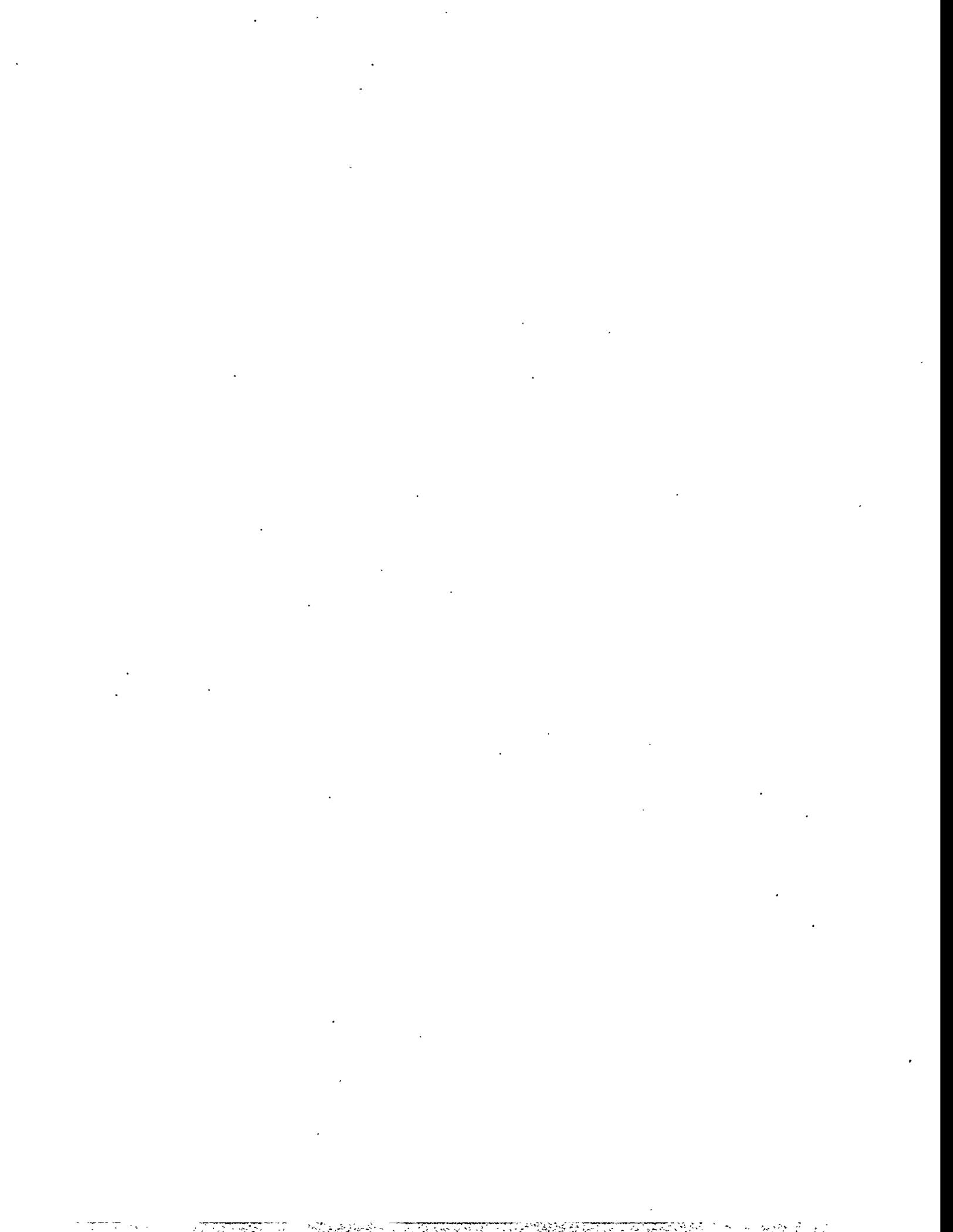
This report is part of an ongoing series of studies prepared by the Pacific Northwest National Laboratory to support mobilization planning studies of the Federal Emergency Planning Agency/U.S. Department of Defense (FEMA/DOD). Earlier sets of EOC estimates were developed in 1985 and 1991.

As in the earlier studies, this report relies heavily upon the Survey of Plant Capacity (SPC) which has been conducted by the Census Bureau since 1974. (The survey covers the fourth quarter for each year.) In the 1990s, the Census Bureau revised the survey in an attempt to better estimate the ability of manufacturing industries to produce under "national emergency conditions." In the latest two surveys (1992 and 1994, as the survey is now conducted biennially), more emphasis has been placed on the potential to use multiple work shifts to increase production.

As a result of these changes, the level of emergency capacity shown in this study for the latest historical year, 1994, is related directly to this survey measure of utilization. This approach differs from the earlier PNNL studies in which auxiliary information from the SPC concerning weekly hours of production was used to infer the maximum level of production based upon multiple shifts and seven-day workweeks. However, based upon unpublished data provided by the Census Bureau for plant hours for the fourth quarter of 1994, this study does provide a mechanism to adjust the EOC estimates to be consistent with the previous weekly-hours-based methodology.

This study presents estimates of EOC through 2005. As in the 1991 study, projections of capacity were based upon extrapolations of equipment capital stocks. The methodology uses time series regression models based on industry data to obtain a response function of industry capital stock to levels of industrial output. The "distributed lag" coefficients of these response function are then used with projected outputs to extrapolate the 1994 level of EOC. Projections of industrial outputs were taken from the intermediate-term forecast of the U.S. economy prepared by INFORUM (Interindustry Forecasting Model, University of Maryland) in the spring of 1996.

The unweighted average growth rate of capacity for all 458 4-digit SIC industries from 1995 to 2005 is 2.3% per year. However, based upon the INFORUM model projections, there is considerable dispersion in the growth rates across industries. Capacity in ten percent of the industries is projected to decline over the next decade, while in 65 industries, capacity growth is expected to grow by more than 5 percent per year.



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1.0 Introduction

This purpose of this study is to develop estimates and projections of national emergency operating capacity (EOC) for 458 manufacturing industries at the 4-digit Standard Industrial Classification (SIC) level. The EOCs are calculated in order to provide a baseline measure of the ability of industry to produce abnormally high levels of output under what are deemed to be emergency conditions, such as a military mobilization or major natural disaster. These measures are intended for use in planning models that are designed to predict the demands for detailed industry sectors that would occur under such conditions.

1.1 Background

In 1983, the Federal Emergency Management Agency (FEMA) contracted with Pacific Northwest National Laboratory (PNNL) to develop estimates of emergency operating capacity (EOC) in the manufacturing, mining, and utilities industries. The EOC estimates from the 1984 study included approximately 180 manufacturing sectors, 7 mining sectors, and the electric utility industry.

In 1991, PNNL extended the earlier EOC work in several important ways. First, the manufacturing industry was disaggregated to the 4-digit SIC level. In total, EOCs for 446 manufacturing sectors were estimated (based upon the 1972 SIC). Second, a more intensive analysis was performed on the potential of increasing operating hours within various manufacturing sectors. Two issues were examined: 1) the loss of worker productivity resulting from operating multiple shifts, and 2) approximate maintenance requirements by typical manufacturing establishments. Third, PNNL performed exploratory work in "frontier" production function analysis to estimate EOCs. And fourth, the 1991 report extended the previous work by providing EOC estimates for key nonmanufacturing sectors.

1.2 Scope of Current Study

This report is part of the ongoing study that supports FEMA/DOD (Department of Defense) mobilization planning studies. The scope of this report is to forecast EOC for each of 458 4-digit manufacturing industries (based upon the 1987 SIC) from 1994 through 2005. In particular, the objective of this report is to provide FEMA with industry capacity projections that reflect continued downsizing of the defense establishment but modest growth in the remainder of the economy. The methodology uses time series regression models based on industry data to obtain a response function of industry capital stock to levels of industrial output. The "distributed lag" coefficients of these response function are then used with projected outputs to extrapolate the 1994 level of EOC. The 1994 EOC is based upon information collected by the Bureau of Census in its Survey of Plant Capacity (DOC 1996).

1.3 Organization of Report

The report is organized to present the methodology and concepts in Chapters 1 through 4, while the several appendices contain complementary information. Chapter 2 presents general concepts of capacity used in the study as well as a brief comparison of the 1991 and more recent

emergency capacity estimation methodologies. Chapter 3 presents the model used to link capital stocks to industry outputs as well as empirical results. Chapter 4 contains a description of an economic scenario and other assumptions used to develop the actual capacity projections. Appendix A contains a brief description of key data sources and construction methods to develop time series for the estimation methodology. Appendix B explores the relationship of the capacity utilization rates and hours worked in the 1990, 1992, and 1994 Surveys of Plant Capacity (DOC 1992, 1994, 1996).

2.0 General Approach

This chapter begins with a review of the concepts of capacity as they have been defined in the literature. It is followed by a description of the procedure used by PNNL to estimate practical capacity. The last section discusses the methodology used to forecast practical capacity through the year 2005.

2.1 Definitions of Capacity

Statistical measures of industrial capacity are widely regarded as indicators of short-run supply potential and are used in FEMA's ROCS (Resolution of Capacity Shortfalls) model to establish output constraints. The theoretical counterparts to these statistical measures play a major role in the literature on business investment and are important in discussions of sustained economic growth. Because of the importance of these concepts, there has been no shortage of theoretical considerations for the measurement of capacity.

2.1.1 Theoretical Concepts

The theoretical underpinnings can be collected under at least three different headings: economic capacity, engineering capacity, and feasible capacity. When the translation from theory to measurement takes place, yet other definitions of capacity are evidenced—practical or emergency capacity. We will first define these concepts, then relate them to emergency capacity, a concept more pertinent to the concerns of an emergency manager.

Economic Capacity

Economic capacity applies to a firm or establishment and denotes a short-run optimal, or preferred, output level with fixed capital equipment. In the neoclassical tradition, one views short-run production optimality with fixed capital stock as the level of output achieved at the optimal long-run capital-output ratio—heuristically this is the minimum point on the average cost curve. In the Keynesian Tradition, one views prices of factors and products as fixed, then optimal capacity is defined as the profit maximizing level of output—the output level at which marginal cost equals price. When these concepts are translated into statistical measures, the Keynesian concept is the more appropriate one since surveys indicate that firms typically operate well below capacity, and usually well below those rates that are preferred. If these data were interpreted strictly in the neoclassical tradition, the indicated under-utilization would imply disinvestment, which is only rarely observed. Moreover, the Keynesian concept is more amenable to a discussion of changes in capacity as economic incentives change over the cycle.

Engineering Capacity

Engineering capacity denotes a limit to production that reflects the physical or technologically determined potential of plant and equipment. These are typically discussed without reference to economic considerations or availability of other factors, so they reflect a theoretical maximum output. This concept is most appropriate at the process level—rated horsepower, template ratings of boilers,

etc. The least ambiguous application of this concept might be to continuous process industries: basic steel, aluminum, and pulp and paper. Moreover, the concept applies to an industrial process; the organization of a production facility is an exercise in combining these processes so that the capacity of the facility is not unduly restricted by any particular process.

Feasible Capacity

Since the concept of capacity typically applies to a firm or a process, difficulties arise when the concept is applied to aggregates of firms. At the industry level, one tends to view capacity as that level of output that is feasible or achievable. This level is typically less than the sum of all firms' engineering capacity because the factor supply curves faced by an industry are less elastic than those faced by a firm--a basic result of price theory. When considering a single firm, one customarily assumes that all the variable factors needed can be acquired to make full use of capital equipment. But if all firms in the industry pursue this policy, shortages of materials and manpower will rapidly occur. So aggregate measures of capacity require accounting for all factors that might limit production, including resource constraints influenced by the availability of foreign supplies. The "production based" capacity measures--e.g., the Wharton index, the Federal Reserve Board (FRB) capacity indexes--are the statistical measures that most closely correspond to this concept.

2.1.2 Census Survey Measures of Emergency Capacity

When survey methods are used to construct a statistical measure of capacity, it is important to understand the concept that respondents have in mind. The Census Bureau has attempted to measure this concept since the mid-1970s as part of its Survey of Plant Capacity (SPC). The SPC was conducted annually from 1975 through 1988. Starting in 1990, the survey has been conducted every other year, but also solicits data for the intervening year. Thus, for example, the latest 1994 survey requested information for both 1993 and 1994.

Practical Capacity

From 1975 through 1988, the SPC used the concept of maximum practical capacity or practical capacity for short. Practical capacity, as defined by the Census survey over this period, was defined "the maximum level of production that this establishment could reasonably expect to attain using a realistic employee work schedule and the machinery and equipment in place during the time periods covered by this survey." Further instructions suggested that the respondent take into account what is achievable for the particular industry under local conditions and that no effective material or resource constraints apply (no cost increases are to be taken into account).

National Emergency Capacity

In 1990, the Census Bureau revised the SPC to get closer to an explicit measure of emergency capacity. In determining "national emergency production" (which replaced the former measure of practical capacity), respondents were first given the following general definition: "the maximum level of production that this establishment could expect to attain and sustain for one year or more under national emergency conditions." (National emergency conditions as cited in the revised SPC are military surge or mobilization or natural disaster).

The 1990 SPC attempted to better clarify the conditions under which emergency capacity should be estimated. In addition to the general conditions formerly spelled out to collect practical capacity, the 1990 SPC now included the following key factors:

- 1) Emergency capacity is to include the machinery and equipment that would require extensive reconditioning before it could be made operable.
- 2) Minimal downtime is to be assumed.

The 1992 SPC further clarified the question related to the national emergency capacity by putting more emphasis on the potential for multiple work shifts. The definition of national emergency capacity was modified to read "The maximum level of production that this establishment could expect to attain and sustain for one year or more under national emergency conditions *of multiple work shifts*" (wording in italics added in 1992 SPC). This definition was retained in the 1994 SPC.

In addition, the following conditional statements were modified:

- 1) Assume minimal downtime *and multi-work shift operations* (wording in italics added in 1992 SPC).
- 2) Assume the maximum number of shifts and maximum hours of plant operation that can be attained by your plant under emergency conditions (*e.g., 168 hours of operations per week less plant maintenance downtime*) [wording in italics added in 1992 SPC].

2.2 General Methods to Estimate Emergency Capacity

This section briefly describes the general method used to estimate emergency capacity in the 1991 PNNL study and compares it with the method used in the current study.

2.2.1 Summary of 1991 Approach

In the 1991 PNNL study, estimates of practical capacity were constructed for 446 four-digit SIC manufacturing sectors. The methodology used to construct a practical capacity series utilizes capital stock measures to estimate practical capacity by 4-digit SIC industry. A complete formulation and description of the procedure is discussed in Belzer et al. (1991). The basic model used to estimate practical capacity is presented below.

A linear model was estimated for each of the 446 manufacturing sectors:

$$Q^P_t = \alpha + \beta K_t \quad (2.1)$$

where Q^P_t = implied practical capacity (output divided by SPC utilization rate)
 K_t = net capital stock of equipment

Equation 2.1 was estimated over the period 1974 through 1986. Based upon the results of the 1991 PNNL study, the decision was made to use net equipment stocks. Furthermore, given the large number of sectors to analyze, the simple linear model in Equation (2.1) was selected to estimate practical capacity.

To make projections of practical capacity, we used projections of industry investment to extrapolate the capital stock series. Given capital stocks, Equation (2.1) was then used to project practical capacity output for each of the 446 4-digit SIC industries through 1992.

One final step was employed to convert practical capacity to emergency capacity. Industry-specific multipliers, termed "shift factors," were developed on the basis of the additional number of working hours per week that could be utilized for production. Prior to 1990, SPC collected information that could be used to estimate the number of hours per week the plant was assumed to operate at practical capacity. Adjusting for required downtime (maintenance and clean-up), the number of additional weekly hours was used to calculate the percentage increase in production that could be attained from these additional hours. As described in the 1991 report, some adjustment was also made for the differential productivity of night versus day shift operations.

2.2.2 Summary of Current Approach

In the current study, the emphasis is shifted to making detailed intermediate-term forecasts of capital stocks by industry. We use recently developed capital stocks data from the Federal Reserve Board's Division of Research and Statistics (Mohr and Gilbert 1995) to estimate the response of capital stocks to changes in industrial output. Given a detailed set of industry output forecasts, we use the coefficients from the capital stock regressions to extrapolate the 1994 (fourth quarter) measure of emergency capacity out to the year 2005.

An explicit linkage between capital stocks and capacity, as was made with Equation 2.1, is precluded since, as discussed above, the concept of capacity changed in both the 1990 and 1992 SPCs. Thus, we do not have a means of developing a consistent time series of implied capacity outputs (production divided by SPC-reported capacity utilization) which we can compare to capital stocks. As a result, we assume that changes in capacity in the long run will be consistent with the evolution of industry demand.

As will be discussed in further detail in Chapter 4, the "shift factor" adjustment was not made to the primary set of estimates derived in this study. For the most part, the changes in the SPC questionnaire are assumed to more accurately reflect the potential production that could be achieved by the use of a longer work week with multiple shifts. (Appendix B provides some empirical support for this assumption.) Thus, we take the measure of emergency capacity (derived as actual production divided by the SPC national emergency capacity utilization) at face value. However, we also provide an optional factor by which a user of this data can convert the measures to reflect a "shift factor" adjustment, one which corresponds to the 1991 methodology. By and large, the "shift factor" approach produces higher estimates of emergency capacity from those derived from the SPC. Users may wish to interpret these alternative estimates as upper bounds for the emergency capacity estimates.

Chapter 3 describes in detail the nature of the models used to link capital stocks to current and lagged levels of industrial output. Chapter 4 discusses how these models were used to extrapolate a measure of emergency constructed for the fourth quarter of 1994.

3.0 Development of Capital Stocks Model

This chapter describes a heuristic model to predict capital stocks, a key element in the development of projections of industrial capacity. In Section 3.1 of this chapter, we compare how capital stocks are used in this study to how they were used in the 1991 PNNL study. The second section lays out a descriptive model that links estimates of capital stocks with lagged measures of output. The final section presents the econometric results for the capital stock-output linkage procedure.

3.1 Role of Capital Stocks Model in 1991 and Current Study

Forecasts of industrial capacity developed by Belzer et al. (1991) made use of equipment capital stocks to forecast implied practical capacity for each of 446 4-digit SIC manufacturing sectors (1972 SIC basis). Time series of implied capacity (output/utilization rate) were regressed against the capital stock measures. However, the data base for equipment capital stocks at the 4-digit SIC level does not currently extend beyond 1986. As a result, an alternative approach and data source are needed to derive more robust estimates and projections of capital stocks, which in turn can be used to predict a measure of capacity by detailed industrial sector.

In the 1991 study, projections beyond 1986 of the calculated measure of practical capacity were based upon extrapolations of equipment capital stocks. These extrapolations (through 1992) were made by using investment forecasts from the Interindustry Forecasting Model, University of Maryland (INFORUM) along with the depreciation rates implicit in the 4-digit capital stock and investment series. Unfortunately, the industry detail available for investment forecasts from the INFORUM model is only 43 sectors in manufacturing. These forecasts were used to extrapolate the investment series in the 446 4-digit SIC sectors. In the prior study, this approach was deemed acceptable because practical capacity was projected only four years beyond the last measured value (from 1988 to 1992).

A principal objective of this study is to make somewhat longer-term projections of capacity at a detailed industry basis. Accordingly, we believed that industry demand at the most detailed basis available should be used explicitly in the predictions of capital stocks. Thus, a set of equations that links capital stocks directly to levels of industrial output is estimated. The coefficients from these equations can be used with medium-term predictions of industrial output to predict industrial capacity.

A direct estimation of capital stocks using lagged values of industrial outputs as the key explanatory variable is admittedly an expedient approach. Economic theory suggests that capital stock estimates should be developed from estimates of investment functions for the industries under consideration. Implementation of a full-scale investment function approach was beyond the scope of this study. First, appropriate measures of factor prices (most notably, rental rates of capital) would be required at a detailed industry basis. Second, considerable attention would be required to identify the most appropriate industry "production function" that is consistent with the investment behavior. As will shown later, we are most interested in determining the lag structure that links capital stocks to

outputs, rather than predicting the absolute values of the capital stocks. Thus, we believe that the direct estimation approach, while lacking the theoretical rigor of a production function-based investment specification, can still be very robust in showing the evolution of capacity in comparison to changes in industry demand.

3.2 Specification of Capital Stocks Model

In general, capital stocks are expected to adjust in some lagged fashion to changes in industrial output. If there are long-run expectations about changes in demand for the product by firms in an industry, a gradual, but steady, change in normal output capacity will tend to occur. For example, industries that supply defense-related products may have long-run expectations of declining demand for their output and will tend to adjust capital stocks (capacity output) downward over time. Further, normal capacity (and capital stocks) will vary as outputs vary over time.

Adjustment rates to long-run changes in product demand and output may differ across industries and may even differ for firms of different size within an industry. While these potential variations in capital stock adjustment are recognized, a small set of models to estimate capital stocks is developed here because of the large number of sectors under consideration.

In early work during this study, a geometric (Koyck) lag model was selected to forecast capital stock, as presented in Equation (3.1), where K_t = net equipment stock in year t , and Q_t = gross annual output in year t :

$$K_t = \alpha + \beta_1 O_t + \beta_2 K_{t-1} + e_t \quad (3.1)$$

This model specification, which represents the "standard" geometric distributed lag framework as introduced by L.M. Koyck (1954), provided more reasonable estimates of the regression coefficients than did several other models that also used capital stock as a lagged dependent variable. The lagged capital stock variable K_{t-1} coefficient consistently had high t -values and the coefficient for the Q_t variable exhibited the greatest number of significant or marginally significant cases. Generally, the predictive values of the model were good, with only industries with relatively high output variations exhibiting somewhat low adjusted R^2 s.

However, the geometric lag function implies that the most recent levels of output have the greatest effect upon capital stock, a result which is counter to many empirical investment functions. Moreover, many of the estimated coefficients on lagged capital stock were very high (occasionally exceeding 1.0), implying either an implausibly long adjustment process or an unstable model. To overcome these deficiencies, the final specification employs a polynomial (Almon) lag formulation. The polynomial lag formulation allows the data to indicate whether the response coefficients decline monotonically (as in the geometric lag specification) or rise for several years and then decline. In order to facilitate the estimation procedure, a second degree polynomial was used. Although this specification allows only one turning point, it still allows greater flexibility than the geometric lag, while minimizing the potential for spurious coefficients that higher-degree polynomials often exhibit (i.e., negative coefficients for later periods of the lag distribution).

The historical data on capital stocks and output clearly show that in many sectors, the long-run capital-output ratio is not constant. To account for trends in this ratio, the lagged output variables were raised to an exponential, whose value is determined in a non-linear regression that includes the polynomial lag. Thus, the general form of the initial capital stock specification was:

$$S(t) = a_0 * Q(t)^b + a_1 * Q(t-1)^b + \dots + a_m * Q(t-m)^b \quad (3.2)$$

3.2.1 Declining Industries

Preliminary testing of this specification indicated that special treatment was required to adequately treat those industries that showed substantial periods of declining output. As we might expect, a comparison of actual versus predicted values from Equation (3.2) showed that capital stock responded more slowly (downward) to output declines as compared to its behavior when output was growing. To account for this asymmetric behavior, we expanded the specification in Equation (3.2) to better explain the behavior of capital stocks when output was declining.

As a first step in the expanded specification, we constructed a variable that tries to distinguish between extended periods of declining output and simply cyclical downturns. The method chosen involved comparing the current 3-year moving average of output with the same moving average 5 years previous. Thus, we define

$$Z1(t) = Q^*(t) - Q^*(t-5) \quad (3.3)$$

where Q^* is the 3-year moving average of Q , ending in $Q(t)$.

$Z1$ is then converted into a qualitative variable ($Z2$) which takes on the value of 1 when $Z1$ is negative (i.e., output is declining) and 0 when it is positive. Some experimentation was then made with various lags of $Z2$. The best specification involved simply calculating the cumulative sum of $Z2$ (implying a long lag, longer than the time series would allow for a credible estimation). Thus, we define $Z3$ as

$$Z3(t) = \text{Sum}(i) [Z(0) + Z(1) + \dots + Z(t)] \quad (3.4)$$

In the final specification, $Z3$ was entered as an additive term which was multiplied by the lagged outputs as shown in Equation (3.2). Thus, the final specification employed was

$$S(t) = a_0 * Q(t)^b + a_1 * Q(t-1)^b + \dots + a_m * Q(t-m)^b + c * Z3(t) [a_0 * Q(t)^b + a_1 * Q(t-1)^b + \dots + a_m * Q(t-m)^b] \quad (3.5)$$

The coefficient c in Equation (3.5) thus represents the magnitude of an offset to the predicted decline in capital stock emanating from the distributed lag structure. The offset is cumulated over all periods in which industry output is deemed to be in permanent decline [from Equation (3.3)]. Thus, given a positive coefficient estimated for c , the capital stock will decline less than it would otherwise [i.e., from Equation (3.2)] in those periods in which $Z3$ is growing [from Equation (3.4), $Z3$ increases during periods of declining output). In terms of empirical results, this specification appears to handle many of the declining industries very well.

3.2.2 Estimation Strategy

The polynomial lags in Equations (3.2) or (3.5) were estimated with an "endpoint" restriction such that the pattern of lag coefficients is forced to zero for the lag of m [see Equation (3.5)] years. We believed that providing such a restriction would yield the most robust predictions of capital stocks for up to a decade in the future. Without the restriction, the coefficients on the oldest values of output can turn negative, a situation which may help to explain a particular capital stock series over the historical period, but one which has no grounding in economic theory. (In essence, such a result implies that changes in output determine the level of capital stock.)

A key issue involves the length of the lag to be utilized. Following the recommendations of several econometrics texts (Kelejian and Oates 1981, Maddala 1977), lags of several lengths were tested and the length yielding the lowest residual variance was chosen for each industry. To maintain a manageable number of estimations, lags of 6, 8, and 10 years were estimated.

The final fitted model is also dependent upon whether the industry has experienced periods of declining output as defined by variable Z1. For those industries with no declining output, the model in Equation (3.2) is estimated.

Equation (3.5) [or (3.2) in the case of no output decline] was in fact estimated in a two-stage procedure. In the first stage the polynomial lag was estimated with only the far endpoint constraint. The lag coefficients were then examined to determine if the lag coefficient at $m = 0$ (current year's lag coefficient) was positive. If not, a second stage was conducted in which a_0 was set equal to zero. At this point, with two endpoint restrictions and a second-degree polynomial, the shape of the lag distribution is completely determined. However, the length of the distribution can vary among industries that contain both these constraints, as the lag length remains dependent upon the residual variance criterion.

3.3 Empirical Results

The results for a few industries will illustrate how the estimation strategy worked in practice. Following these examples, some descriptive statistics indicate the nature of the lag coefficients and capital-output elasticities across the entire sample of industries.

3.3.1 SIC 323: Products of Purchased Glass

With the exception of the 1974-75 and 1979-80 periods, this sector has generally experienced growing output throughout the period of 1968 through 1992. Figure 3.1 shows the results of the non-linear regression using Equation 3.2. The line labeled "Q-Expon" shows the coefficient b in Equation 3.2, revealing that the equipment capital stock has changed approximately 12 percent for every 10 percent increase in the output level (i.e., $b = 1.195$ or approximately 1.2, 12 percent = $1.2 * 10\%$). The two Almon-lag coefficients are shown next--both are statistically significant according to calculated standard errors. The fourth line shows the coefficient on the declining output variable (c), as described above. The value of 0.041 indicates that in the several years in which the value of the variable increased, the capital stock fell 0.041 percent less than what would have been predicted by the influence of lagged outputs alone. This effect can be seen more strongly in several other sectors that will be discussed below.

Number of cases 25

estimated residual variance 569.632

Parameters	Estimates	Std. err.	Est./s.e.	Prob.	Gradient
Q-Expon	1.195981	0.036456	32.806	0.0000	-0.107080
Almon-1	4.723813	2.249337	2.100	0.0179	0.000241
Almon-2	-0.633816	0.151268	-4.190	0.0000	0.081276
Q-Declin	0.041273	0.006040	6.834	0.0000	0.072125

Lag Coefficients

i	Est. Coef.	Normalized
0	24.730	0.097
1	28.820	0.112
2	33.197	0.130
3	33.484	0.131
4	32.503	0.127
5	30.255	0.118
6	26.739	0.104
7	21.956	0.086
8	15.905	0.062
9	8.586	0.034

Figure 3.1. Estimation Results for SIC 323

The bottom portion of the figure shows the lag coefficients that are derived from the Almon coefficients (see Kelejian and Oates 1982 for a). The coefficient for $i = 0$ shows the effect of current year's output on the current (end-of) year's capital stock. The effect of output on the capital stock grows gradually to peak with the lag at $t-3$, subsequently declining to zero in $t-10$. The residual variance of this estimation is 569.32. This residual variance was smaller than either of the specifications using 6 or 8 years.

Figure 3.2 shows graphically the predicted capital stocks in comparison to the actual capital stocks. Clearly, the 10-year lag is able to track the FRB-calculated capital stock in this sector quite well, picking up the acceleration in growth that appears in the latter half of the 1980s. The dashed line in the figure shows a measure of output that is scaled to match the actual capital stock in 1968. While not strongly cyclical, the output series is clearly more volatile on a year-to-year basis than the capital stock.

The dotted line in the figure shows the prediction of capital stock using a geometric lag with a decay rate of 0.05 (i.e., the lag weights on output are 1.0, 0.95, $0.95 \cdot 0.95$, ... 0.95^9). The predicted series also used the same long-run capital-output elasticity (b) as estimated in Equation (3.4). The resulting predicted capital stock series also has been scaled, in this case to match the results of the polynomial lag for 1968. The output declines in the mid-70s yield several increases in the Q-Decline variable. Over the latter part of the 70s, this term helps maintain the capital stock higher than it would be otherwise. As a result, the capital stock is permanently higher than the model using only the distributed lag and the output elasticity of 1.2.

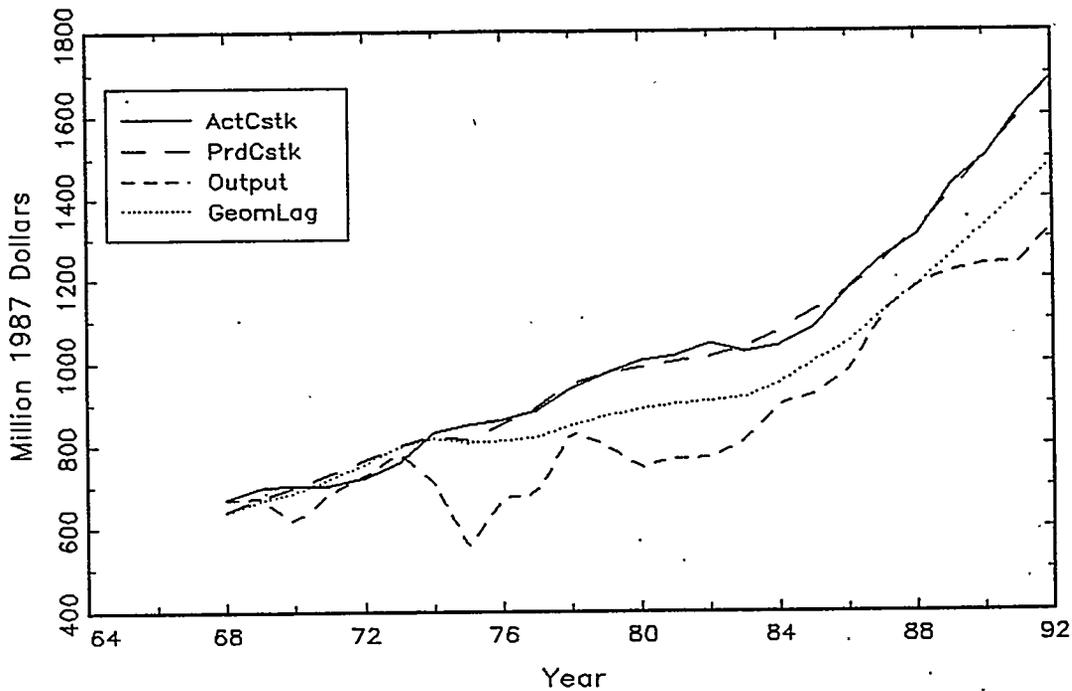


Figure 3.2. Plot of Actual vs. Predicted Capital Stock, SIC 323

3.3.2 SIC 331: Blast Furnace and Basic Steel Products

Figure 3.3 shows the regression results for SIC 331, blast furnace and steel products. The pattern of outputs is quite different from the glass products. In this sector, the capital stock has reacted less than proportionately to output, as indicated by the elasticity coefficient (b , "Q-Expon") of 0.605. The distributed lag coefficients also suggest that changes in output have their greatest effect upon capital stock with a lag of 3 to 5 years. Because this sector has had such a long period of declining output, the coefficient on Q-Decline is highly significant, although its absolute magnitude is not large.

As shown in Figure 3.4, this sector is much more cyclically sensitive, but moreover, has experienced a long decline in output over the 1979-1986 period. The specification in Equation (3.4) appears to provide a satisfactory fit to the FRB-calculated stock.

3.3.3 SIC 384: Medical Instruments and Supplies

Medical Instruments and Supplies (SIC 384) illustrates a sector in which there has been almost continual growth over the past two decades. Thus, in Figure 3.5, the coefficient on the declining output variable (c) does not appear. In this industry, the shorter 6-year lag structure provides the best

Number of cases 25

estimated residual variance 784144.

Parameters	Estimates	Std. err.	Est./s.e.	Prob.	Gradient
Q-Expon	0.605527	0.046771	12.947	0.0000	-151.676188
Almon-1	155.467166	59.719010	2.603	0.0046	0.897662
Almon-2	-14.764499	4.910116	-3.007	0.0013	12.669157
Q-Declin	0.015547	0.002283	6.811	0.0000	102.666082

Lag Coefficients		
i	Est. Coef.	Normalized
0	76.366	0.023
1	217.068	0.064
2	409.887	0.121
3	462.002	0.137
4	484.589	0.143
5	477.647	0.141
6	441.175	0.131
7	375.175	0.111
8	279.646	0.083
9	154.587	0.046

Figure 3.3. Estimation Results for SIC 331

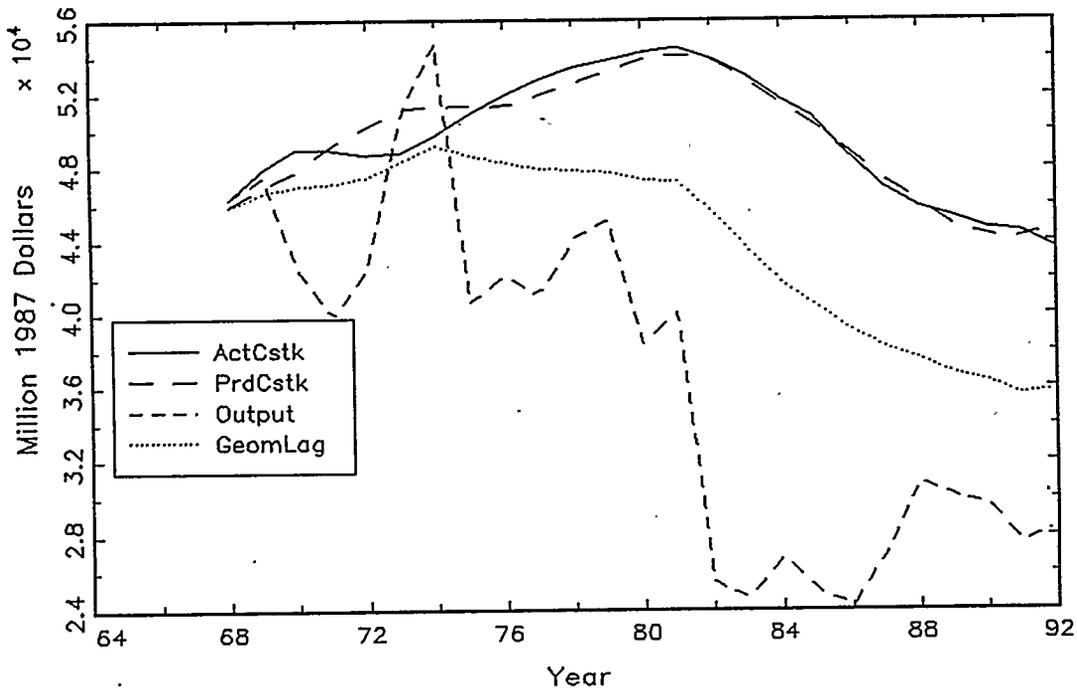


Figure 3.4. Plot of Actual vs. Predicted Capital Stocks, SIC 331

Number of cases 25

estimated residual variance 2035.38

Parameters	Estimates	Std. err.	Est./s.e.	Prob.	Gradient
Q-Expon	1.203578	0.009292	129.530	0.0000	-0.011775
Almon-1	6.428747	1.833682	3.506	0.0002	0.000011
Almon-2	-1.436702	0.248122	-5.790	0.0000	0.005601

Lag Coefficients

i	Est. Coef.	Normalized
0	13.149	0.137
1	18.141	0.188
2	20.259	0.210
3	19.505	0.203
4	15.877	0.165
5	9.375	0.097

Figure 3.5. Regression Results for SIC 384

fit of the capital stock series; the coefficients on lagged output rise for several years before declining to zero. As shown by the coefficient b in Figure 3.5 and the plots in Figure 3.6, the capital stock as measured by the FRB is growing faster than the available measures of output for this industry.

3.4 Summary Results

Capital stock equations were estimated for 159 sectors. For over two-thirds of the industries (112), the best fit was obtained with the longest lag length of 10 years. The remaining sectors were evenly split between a 6-year lag (24 sectors) and an 8-year lag (23 sectors).

Figure 3.7 shows the average pattern of lags. The lag weights were normalized to sum to 1.0 for each sector; the figure shows a simple average across all of the sectors (i.e., sectors with larger capital stocks were not given higher weights in the averaging). The plot clearly shows that a Koyck lag is not appropriate as a general specification, as the average peak response to a change in output occurs with a lag of around 3 years. However, for about 15 percent of the industries (23), the lag pattern indicated the peak response does occur in the initial year. For the majority of industries, however, the peak response occurs with a lag in the range of 3 to 5 years.

The mean elasticity of the capital stock with respect to output is 1.04. Thus, for manufacturing as a whole, the assumption of the constant capital-output ratio has empirical support.

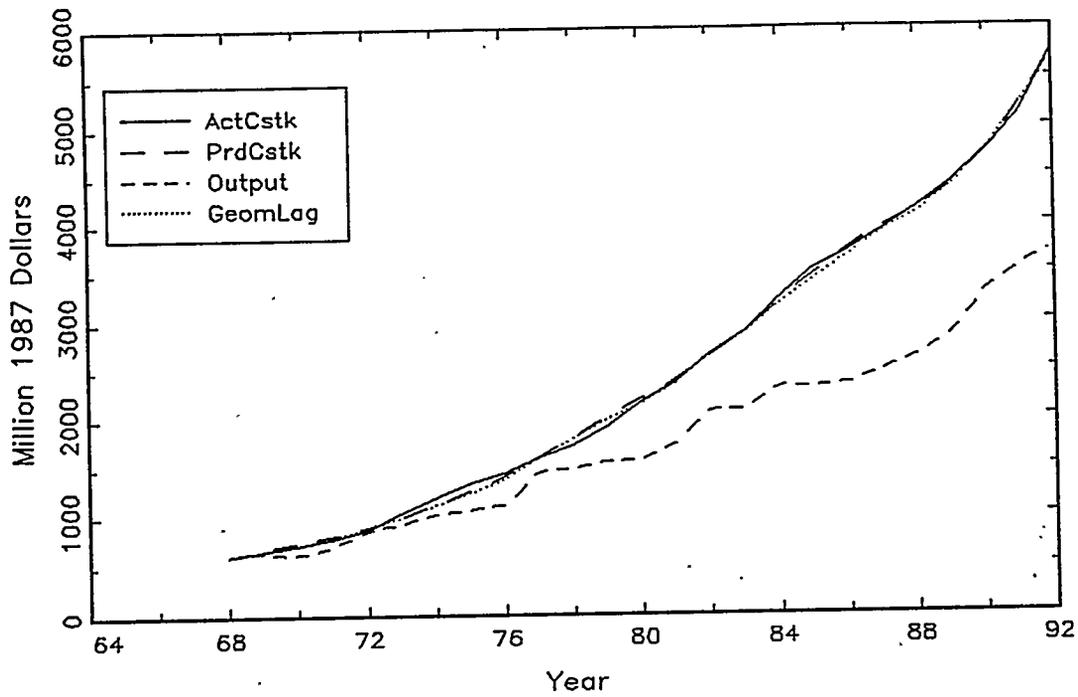


Figure 3.6. Plot of Actual vs. Predicted Capital Stocks, SIC 384

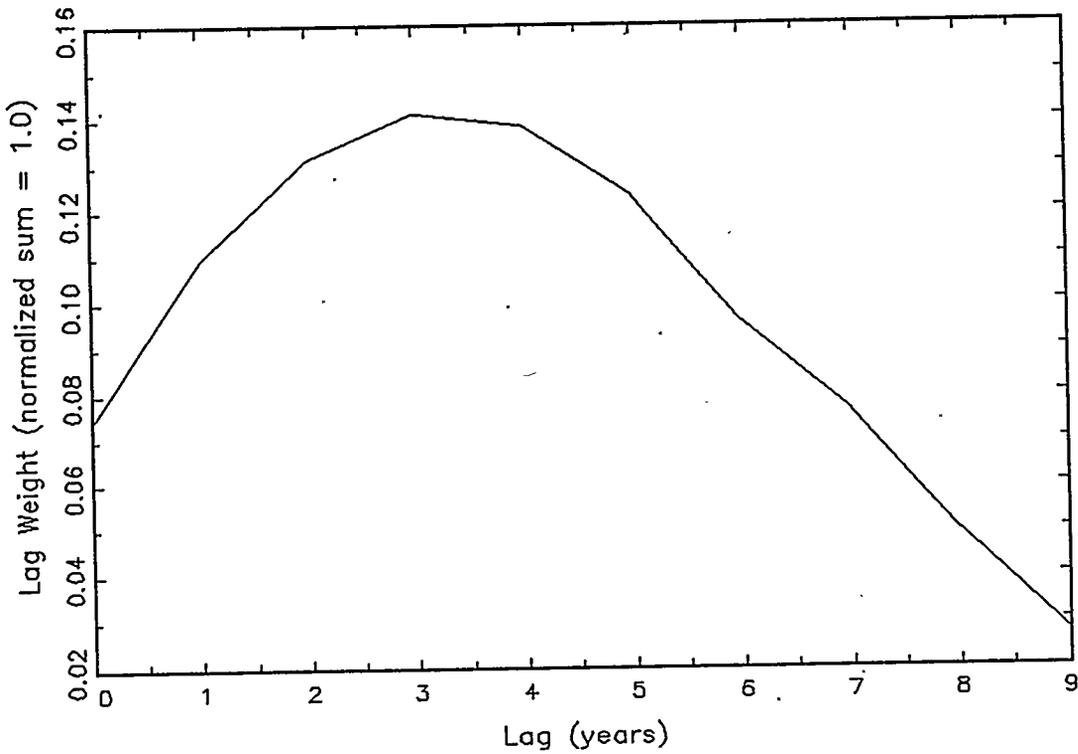


Figure 3.7. Plot of Average Normalized Lag Coefficients

4.0 Industry Capacity Projections

The procedure to project capacity estimates from 1994 through 2005 at the 4-digit SIC level is a multi-step process. It involves a complex sequence of data processing steps using several industry data sets. The projection methodology is based on first projecting industry output and then using the coefficients of the capital stock equations to project capacity.

4.1 Industrial Output Projections

The capacity projections require output projections at the 4-digit SIC level. This section explains the source and methods for developing these projections.

4.1.1 INFORUM Forecast

Projections of industrial outputs were taken from the long-term forecast of the U.S. economy prepared by INFORUM (Interindustry Forecasting Model, University of Maryland) in the spring of 1996. INFORUM has been producing semi-annual forecasts of the U.S. economy for more than twenty years. INFORUM employs its LIFT (Long-term Interindustry Forecasting Tool) to generate annual forecasts out to the year 2010. Based upon this model, the INFORUM group generates industrial output forecasts for over 230 manufacturing sectors (at the three- and four-digit SIC level).

A summary of the INFORUM forecast is provided in Table 4.1.

Table 4.1. Summary of INFORUM Long-Term Forecast of U.S. Economy, May 1996

	1995	2005	Ann %
Gross Domestic Product (\$1977)	3,097	3,816	2.1
Personal Consumption Expend.	2,074	2,432	1.6
Non-residential Structures	121	140	1.5
Producers' Durable Equipment	321	442	3.2
Government Purchases	512	567	1.0
Federal, Defense	129	129	0.0
Federal, Non-defense	56	56	0.0
State & Local	327	382	1.6
Unemployment Rate (%)	5.7	5.3	-0.7
GDP Deflator	229.7	316.6	3.2

The 2.1 percent growth in Gross Domestic Product (GDP) is slightly higher than the average growth experienced by the U.S. economy over the 1989-1995 time frame. According to the INFORUM model, the long-term growth rates in the economy reflect the two major elements defining the overall growth potential: 1) growth in the labor force, and 2) growth in labor productivity. The model has been adjusted to achieve a "full employment" level of activity; unemployment rates fall slightly over the next decade.

Given the pressures on the federal budget and the change of political climate in the Congress, the model shows no real increases in federal expenditures, either for defense or non-defense. Although not shown above, the model assumes continued growth in federal transfer payments.

4.1.2 Output Projections

The INFORUM modeling system generates forecasts of output for 230 manufacturing sectors. To further disaggregate these forecasts to a complete 4-digit SIC basis, we generated simple time series models for those 4-digit sectors that were not separately identified by INFORUM. For each 4-digit industry that is part of a larger INFORUM-defined sector, we estimate a logistic function of time (t) as follows:

$$x(i)/x(I) = c a \exp(bt)/(1.0 + a \exp(bt)) \quad (4.1)$$

where $x(i)$ = output for 4-digit SIC industry i

$x(I)$ = output for aggregation of 4-digit SIC sectors that match INFORUM sector I

The three-parameter (a , b , and c) function in Equation (4.1) is estimated for sectors whose shares are rising. For sectors whose output shares are falling, we estimate the complement of Equation (4.1), or 1.0 minus the expression on the right-hand side of 4.1. The estimation period was 1980 through 1993.

The s-shaped pattern of the logistic function helps to ensure that an output share will not exceed 1.0 during the forecast period. The share in the specification in Equation (4.1) asymptotically approaches the estimated value of c . During the estimation process, we limit the value of c to an upper bound of 1.0 and a lower bound of 0.1 times the 1993 actual share.

The industry outputs for the projection period through 2002 are obtained in a straightforward manner. For cases in which the INFORUM model supplies forecasts at the 4-digit SIC level, the time series of industrial outputs is extrapolated by a simple ratio. The year 1993 is employed as the linkage year. For the remaining sectors, we use the appropriate INFORUM output and the results of the share Equation (4.1) as an extrapolator.

4.2 Capacity Projections

Given annual projections of industrial outputs at the 4-digit SIC, the generation of capacity outputs can be obtained using the results of the capital stock regression discussed in Section 3. The procedure can be divided into two steps. First, we require an estimate of emergency capacity for the last year of the reported utilization measure, the fourth quarter of 1994. Second, we use the coefficients of the capital stock regressions to extrapolate this value out to 2005.

4.2.1 Base Period Capacity

Base period (1994:4) emergency capacity is defined simply as industrial output divided by the reported National Emergency Production utilization rate reported in the SPC. This approach differs from the 1991 study in two respects. First, in the 1991 study, the measure of utilization ("practical" capacity) was not linked to a single year, but rather to the results of a smoothing regression that employed capital stocks. The smoothing regression helped to dampen the year-to-year variation in implied capacity (i.e., output/reported utilization rate). As discussed in Chapter 2 of this report, the SPC changed definitions of emergency utilization beginning in 1989 (for the 1990 SPC covering 1989:4 and 1990:4). In the subsequent SPC, the definition of national emergency production was further changed, placing more emphasis on the fact that additional work shifts should be considered. The result is that the utilization measures between 1990 and 1991 are also not comparable. Thus, with only four data points (1991:4 through 1994:4) for emergency utilization rate, a smoothing regression of the form used in the prior study is not possible.

The second difference relates to the use in the 1991 study of "shift factors," which were used to translate practical capacity into EOC. The shift factors were based on information concerning the number of hours that might be worked at practical capacity (provided by SPC respondents) and an assumed maximum number of weekly hours that could be worked. The present study does not adjust the survey-based measure of national emergency capacity. Given the emphasis in the revised (1992) SPC questionnaire on the potential to utilize multiple work shifts, it did not seem appropriate to override the responses in the survey with blanket assumptions as to the number of the weekly hours that plants could operate on average within an industry sector. Some empirical evidence suggests that survey respondents did indeed take account of the potential for additional shifts if emergency conditions warranted (see Appendix B). However, as we describe below, we have provided a optional factor by which the survey-based emergency capacity estimate can be adjusted to reflect a shift-factor basis.

4.2.2 Base Period Production (Shipments)

The base period utilization rate in this study is the fourth quarter of the 1994, the latest period for which information from the SPC is available. For consistency, the appropriate measure of output to derive capacity is for the fourth quarter of 1994. However, the Bureau of Economic Analysis (BEA) supplies information on industry shipments on an annual basis only. As a result, we attempted to develop an estimate of quarterly production (shipments) that could used to compute base period (1994:4) capacity.

The basic method to develop quarterly output measures was to use FRB production indexes, converted to quarterly values, as interpolating series. The procedure used polynomial interpolation--of degree three--to develop quarterly series that were consistent with the annual measures. FRB measures were available for about 80 industries in manufacturing. As a result, many of the FRB series were used to interpolate more than one 4-digit SIC industry. In general, the value of production in the fourth quarter of 1994 for most industries was higher than the 1994 annual average because the economy was continuing to recover from the mild 1991 recession.

4.2.3 Capacity Projection Methodology

The methodology to project the base period emergency capacity is straightforward. The coefficients from the capital stock equations are applied to the historical and projected industry outputs to project capital stocks. The key element in this procedure is that the capital stock-output elasticity coefficients [the estimated exponent in Equations (3.2) and (3.5)] are all set to 1.0. Thus, we posit that in the long run, capacity will grow proportionately to meet expected industry demand. The lag coefficients, however, will cause industry capacity to grow either faster or slower than output over a period as short as a half-decade.

The projection methodology recognizes that we are interested in projecting capacity, not the capital stock. As we observed in Chapter 3, on an industry-by-industry basis, the capital stock is likely a poor indicator of long-run changes in capacity, even though for manufacturing as whole, the capital stock appears to mimic the growth in output. For this study, we utilize the short-run adjustment patterns between capacity and output, as embodied in the estimated lag coefficients for capital stocks, in order to make medium-term projections of capacity.

The projected capital stocks with the modified regression coefficients (i.e., $b = 1.0$) are used to extrapolate the base period (1994:4) emergency capacity estimates. By construction, the resulting capacity estimates would relate to the fourth quarters of the years projected, consistent with the end-of-year capital stocks that were used in the estimating equations.

4.2.4 Description of Tabular Results

Tables 4.2 and 4.3 present the results of the emergency capacity projections for each of the 458 4-digit SIC manufacturing industries. Table 4.2 provides an estimate of the base period (fourth quarter of 1994) capacity and the contributing factors in its construction. Table 4.3 provides industry projections of emergency capacity through 2005. Columns one and two of both tables give the sector number and SIC for each industry, followed by the industry definition.

Column four of Table 4.2 shows the 1994 annual shipments provided by the BEA. Column five shows the ratio of the derived 1994:4 production (shipments) values to the 1992 average production (shipments) value. Although the majority of sectors fall within the range of 0.95 to 1.05, there are some sectors with a larger variation. Examination of the (seasonally adjusted) FRB production indexes reveals that some industries have significant quarterly variation in production levels.

Column six lists the SPC national emergency capacity utilization rates for the fourth quarters of 1994. Column seven gives the implied 1994:4 emergency capacity estimate. It is derived by 1) multiplying the annual production (shipments) value in column four by the quarterly adjustment factor in column five, and subsequently dividing this product by the 1994:4 utilization rate (column six). (Because the adjustment factors in column five are rounded to three places, using that value will not yield the exact value of capacity shown in column seven.)

Columns three through fourteen of Table 4.3 provide the projections of emergency capacity through 2005. These projections are based on the capital stock equations that set the stock/output

Table 4.2. Base Period Capacity and Adjustment Factors

Sector Num.	SIC	Sector Title	1994 Shipments (mill. 92\$)	1994:4 Adj. Fac. Ratio	1994:4 SPC CU (%)	1994:4 Emer Cap (mill. 92\$)	Optional Hrs. Adj. (multiplier)
1	2011	Meatpacking plants	51,294.4	0.990	76	66,824.3	2.67
2	2013	Sausages and other prepared meats	19,980.2	1.016	71	28,577.9	1.40
3	2015	Poultry slaughtering and processing	25,912.7	0.998	76	34,020.9	1.40
4	2021	Creamery butter	920.1	0.969	63	1,415.8	1.00
5	2022	Cheese, natural and processed	17,185.0	1.014	80	21,771.7	1.93
6	2023	Dry, condensed and evap. dairy products	7,141.7	1.010	71	10,159.5	1.00
7	2024	Ice cream and frozen desserts	5,448.8	1.028	65	8,616.5	1.52
8	2026	Fluid milk	21,957.5	0.995	78	28,005.7	1.03
9	2032	Canned specialties	7,085.0	1.003	57	12,466.7	3.15
10	2033	Canned fruits and vegetables	14,454.5	0.992	57	25,162.6	1.00
11	2034	Dehydrated fruits, vegetables, and soups	2,524.9	0.978	61	4,048.5	1.01
12	2035	Pickles, sauces, and salad dressings	7,958.0	1.051	61	13,708.1	1.00
13	2037	Frozen fruits and vegetables	8,442.7	1.014	86	9,952.4	1.00
14	2038	Frozen specialties, n.e.c.	8,839.9	1.000	68	13,000.6	1.00
15	2041	Flour, and other grain mill products	7,003.1	1.029	85	8,478.5	1.00
16	2043	Cereal breakfast foods	11,103.8	1.012	72	15,612.9	1.00
17	2044	Rice milling	1,840.5	1.036	93	2,049.9	1.00
18	2045	Prepared flour mixes and doughs	3,906.5	1.018	70	5,683.7	1.42
19	2046	Wet corn milling	7,113.3	0.995	96	7,373.7	1.00
20	2047	Dog and cat food	6,703.8	0.992	79	8,420.6	1.00
21	2048	Prepared feeds, n.e.c.	14,379.6	1.002	54	26,683.1	1.00
22	2051	Bread, cake, and related products	18,257.1	1.000	65	28,074.3	1.00
23	2052	Cookies and crackers	9,836.1	1.027	70	14,433.3	1.13
24	2053	Frozen bakery products, except bread	1,977.1	1.054	68	3,063.9	1.88
25	2061	Raw cane sugar	1,527.8	0.982	94	1,595.6	1.00
26	2062	Cane sugar refining	2,600.8	0.956	71	3,502.0	1.00
27	2063	Beet sugar	2,567.6	0.982	96	2,627.1	1.01
28	2064	Candy and other confectionary products	10,668.8	0.976	59	17,647.6	1.28
29	2066	Chocolate and cocoa products	3,004.3	0.972	67	4,358.8	1.00
30	2068	Salted and roasted nuts and seeds	2,973.6	0.995	60	4,930.0	1.32
31	2074	Cottonseed oil mills	651.9	0.973	95	667.6	1.00
32	2075	Soybean oil mills	11,226.8	1.012	86	13,204.6	1.00
33	2076	Vegetable oil mills, n.e.c.	435.3	1.058	58	794.3	1.00
34	2077	Animal and marine fats and oils	1,779.2	1.002	65	2,741.7	1.24
35	2079	Edible fats and oils, n.e.c.	4,174.8	0.957	58	6,889.9	1.00
36	2082	Malt beverages	17,295.4	1.003	74	23,440.3	1.00
37	2083	Malt	563.8	0.987	99	562.3	1.00
38	2084	Wines, brandy, and brandy spirits	4,272.5	1.034	44	10,043.9	1.39
39	2085	Distilled and blended liquors	3,734.4	0.987	38	9,696.2	1.00
40	2086	Bottled and canned soft drinks	27,674.8	1.005	62	44,846.1	1.93
41	2087	Flavoring extracts and syrups, n.e.c.	7,292.3	1.037	53	14,264.4	1.41
42	2091	Canned and cured fish and seafoods	1,017.0	1.044	61	1,740.2	1.48
43	2092	Fresh or frozen prepared fish	6,626.1	1.030	44	15,514.5	1.04
44	2095	Roasted coffee	4,873.4	0.983	61	7,855.1	1.19
45	2096	Potato chips and similar snacks	7,787.6	1.037	68	11,876.3	1.32
46	2097	Manufactured ice	382.7	1.045	40	999.6	1.00
47	2098	Macaroni and spaghetti	1,257.8	1.035	79	1,648.3	1.00
48	2099	Food preparations, n.e.c.	13,022.3	1.045	57	23,864.3	1.20
49	2111	Cigarettes	31,179.5	0.968	81	37,242.5	1.12
50	2121	Cigars	288.1	0.988	47	563.8	1.04
51	2131	Chewing and smoking tobacco	1,627.8	0.989	60	2,682.8	1.14
52	2141	Tobacco stemming and redrying	2,926.7	1.007	57	5,169.2	1.00
53	2211	Broadwoven fabrics mills, cotton	6,220.2	1.021	97	6,548.9	1.00
54	2221	Broadwoven fabrics mills, manmade fiber	9,892.9	1.036	86	11,912.5	1.00
55	2231	Broadwoven fabrics mills, wool	1,835.7	1.017	77	2,425.6	1.00
56	2241	Narrow fabrics mills	1,438.6	0.996	71	2,017.9	1.00
57	2251	Women's hosiery, except socks	1,649.9	0.987	67	2,429.3	1.00
58	2252	Hosiery, n.e.c.	2,833.1	1.015	74	3,886.2	1.49
59	2253	Knit outerwear mills	5,234.0	1.062	79	7,038.7	2.52
60	2254	Knit underwear mills	896.9	0.970	63	1,381.2	1.51
61	2257	Wet knit fabrics mills	5,670.3	1.054	82	7,291.7	1.00
62	2258	Lace and warp knit fabrics mills	2,560.9	0.980	77	3,260.7	1.14
63	2259	Knitting mills, n.e.c.	254.4	0.984	90	278.0	1.61
64	2261	Finishing plants, cotton	3,007.9	1.056	83	3,828.3	1.14
65	2262	Finishing plants, manmade	3,435.2	1.019	82	4,269.5	1.00
66	2269	Finishing plants, n.e.c.	1,240.7	0.981	86	1,415.6	1.11
67	2273	Carpets and rugs	10,898.9	1.006	72	15,231.3	1.04
68	2281	Yarn spinning mills	8,284.9	1.014	91	9,228.0	1.00
69	2282	Throwing and winding mills	3,166.3	1.029	85	3,832.7	1.00
70	2284	Thread mills	906.0	1.009	79	1,157.0	1.00
71	2295	Coated fabrics, not rubberized	1,786.8	1.019	50	3,640.0	1.00

Table 4.2. (contd)

Sector Num.	SIC	Sector Title	1994	1994:4	1994:4	1994:4	Optional
			Shipments (mill. 92\$)	Adj. Fac. Ratio	SPC CU (%)	Emer Cap (mill. 92\$)	Hrs. Adj. (multiplier)
72	2296	Tire cord and fabrics	879.1	0.934	83	989.2	1.00
73	2297	Nonwoven fabrics	3,425.7	0.978	82	4,085.7	1.29
74	2298	Cordage and twine	752.0	0.984	65	1,137.9	1.67
75	2299	Textile goods, n.e.c.	2,328.5	1.023	76	3,133.6	1.77
76	2311	Men's and boys' suits and coats	2,337.4	0.970	54	4,196.5	2.03
77	2321	Men's and boys' shirts	5,023.6	0.977	40	12,268.3	1.47
78	2322	Men's and boys' underwear and nightwear	856.2	0.932	35	1,748.1	1.36
79	2323	Men's and boys' neckwear	695.9	0.993	55	1,255.9	1.00
80	2325	Men's and boys' trousers and slacks	7,044.2	0.981	38	18,178.4	1.12
81	2326	Men's and boys' work clothing	1,648.8	0.992	49	3,337.6	1.59
82	2329	Men's and boys' clothing, n.e.c.	2,867.2	1.004	63	4,568.9	2.43
83	2331	Women's and juniors' blouses and shirts	4,080.6	0.976	94	4,237.0	2.27
84	2335	Women's and juniors' dresses	6,526.1	0.970	48	13,182.1	1.77
85	2337	Women's and juniors' suits and coats	4,056.8	0.978	60	6,614.1	1.00
86	2339	Women's and juniors' outerwear, n.e.c.	8,210.9	1.041	59	14,490.6	2.11
87	2341	Women's and children's underwear	2,392.6	0.947	75	3,021.3	2.88
88	2342	Brassieres, girdles, and allied garments	1,740.9	1.022	72	2,471.3	2.77
89	2353	Hats, caps, and millinery	941.5	1.008	58	1,636.6	1.91
90	2381	Girls' and children's dresses and blouses	1,727.1	0.942	65	2,502.6	2.50
91	2369	Girls' and children's outerwear, n.e.c.	2,211.2	0.956	54	3,914.6	1.98
92	2371	Fur goods	130.2	0.875	80	142.4	1.00
93	2381	Fabrics dress and work gloves	370.6	0.952	38	928.6	1.46
94	2384	Robes and dressing gowns	330.8	0.980	40	810.5	1.00
95	2385	Waterproof outerwear	185.8	0.938	64	272.5	1.00
96	2386	Leather and sheep lined clothing	246.2	1.031	68	373.1	2.63
97	2387	Apparel belts	705.0	0.980	48	1,440.1	1.89
98	2389	Apparel and accessories, n.e.c.	757.7	1.007	63	1,211.2	2.31
99	2391	Curtains and draperies	1,161.3	0.932	55	1,968.2	2.14
100	2392	House furnishings, n.e.c.	6,059.5	0.996	51	11,833.2	1.08
101	2393	Textile bags	888.0	1.013	43	2,091.6	1.49
102	2394	Canvas and related products	1,169.5	0.993	46	2,524.3	1.42
103	2395	Pleating and stitching	698.1	0.966	50	1,348.7	1.00
104	2396	Automotive and apparel trimmings	6,984.2	1.029	57	12,571.2	1.56
105	2397	Schiffli machine embroideries	338.1	0.967	80	408.6	1.98
106	2399	Fabricated textile products, n.e.c.	3,984.5	0.994	49	8,045.2	1.80
107	2411	Logging	13,499.2	1.008	70	19,442.9	1.00
108	2421	Sawmills and planing mills, general	20,995.2	0.976	42	48,781.8	1.40
109	2426	Hardwood dimension and flooring mills	2,368.7	1.022	49	4,941.5	1.72
110	2429	Special product sawmills, n.e.c.	152.7	0.946	54	267.5	1.59
111	2431	Millwork	10,216.5	0.996	49	20,773.5	1.75
112	2434	Wood kitchen cabinets	5,331.3	1.022	45	12,105.8	1.59
113	2435	Hardwood veneer and plywood	2,273.6	1.019	62	3,736.4	1.00
114	2436	Softwood veneer and plywood	5,384.2	0.974	94	5,580.7	1.12
115	2439	Structural wood members, n.e.c.	3,265.4	1.033	57	5,917.1	1.74
116	2441	Nailed wood boxes and shoo	422.2	0.942	41	970.4	1.48
117	2448	Wood pallets and skids	2,344.1	0.987	61	3,792.7	1.93
118	2449	Wood containers, n.e.c.	330.5	0.942	46	676.6	1.30
119	2451	Mobile homes	6,204.4	1.058	42	15,624.7	1.58
120	2452	Prefabricated wood buildings	2,433.8	0.995	47	5,150.7	1.55
121	2491	Wood preserving	2,889.4	0.989	58	4,925.2	1.27
122	2493	Reconstituted wood products	4,433.1	1.037	86	5,347.5	1.03
123	2499	Wood products, n.e.c.	3,796.3	0.994	61	6,187.2	2.29
124	2511	Wood household furniture	9,160.5	1.004	60	15,322.8	2.08
125	2512	Upholstered household furniture	7,193.2	1.009	52	13,959.1	2.02
126	2514	Metal household furniture	2,133.3	0.988	56	3,763.7	2.05
127	2515	Mattresses and bedsprings	3,191.8	0.994	46	6,894.5	1.69
128	2517	Wood television and radio cabinets	380.6	1.023	39	998.8	1.46
129	2519	Household furniture, n.e.c.	446.9	1.021	71	642.9	1.28
130	2521	Wood office furniture	1,989.2	1.013	29	6,949.0	1.06
131	2522	Office furniture, except wood	6,183.4	1.024	49	12,917.6	1.17
132	2531	Public building and related furniture	5,126.0	1.078	67	8,249.6	1.19
133	2541	Wood partitions and fixtures	3,256.8	1.027	50	6,690.4	1.64
134	2542	Partitions and fixtures, except wood	3,671.2	1.029	69	5,473.9	1.92
135	2591	Draperly hardware and blinds and shades	2,203.6	1.019	42	5,344.0	1.49
136	2599	Furniture and fixtures, n.e.c.	2,543.1	1.010	58	4,430.2	2.07
137	2611	Pulp mills	4,535.8	0.963	96	4,551.7	1.00
138	2621	Paper mills	34,661.7	0.994	93	37,038.6	1.00
139	2631	Paperboard mills	17,954.6	0.987	97	18,266.5	1.00
140	2652	Set-up paperboard boxes	502.8	0.915	42	1,095.8	1.37
141	2653	Corrugated and solid fiber boxes	21,422.5	0.995	68	31,348.3	1.31
142	2654	Fiber cans, drums, and similar product	1,949.8	0.981	44	4,347.3	1.23

Table 4.2. (contd)

Sector Num.	SIC	Sector Title	1994	1994:4	1994:4	1994:4	Optional
			Shipments (mill. \$2\$)	Adj. Fac. Ratio	SPC CU (%)	Emer Cap (mill. \$2\$)	Hrs. Adj. (multiplier)
143	2655	Sanitary food containers	2,494.7	0.949	65	3,643.0	1.00
144	2657	Folding paperboard boxes	8,196.4	0.985	72	11,208.7	1.62
145	2671	Paper coated and laminated, packaging	3,851.3	1.060	74	5,515.5	1.06
148	2672	Paper coated and laminated, n.e.c.	8,724.3	1.044	65	14,009.8	1.00
147	2673	Bags: plastics, laminated, and coated	6,004.7	1.054	65	9,740.4	1.00
148	2674	Bags: uncoated paper and multiwall	2,666.8	1.036	78	3,542.6	1.00
149	2675	Die cut paper and board	2,205.9	1.008	34	6,542.0	1.00
150	2676	Sanitary paper products	16,827.7	1.038	86	20,313.5	1.00
151	2677	Envelopes	2,821.0	1.037	78	3,752.2	1.00
152	2678	Stationary products	1,387.0	1.047	70	2,074.3	1.60
153	2679	Converted paper products, n.e.c.	4,949.4	1.056	79	6,617.5	1.65
154	2711	Newspapers	33,288.6	0.994	62	53,357.2	1.66
155	2721	Periodicals	20,629.6	1.008	50	41,583.5	1.00
156	2731	Book publishing	18,387.7	1.016	75	24,920.9	1.00
157	2732	Book printing	4,566.4	1.016	81	5,763.7	1.44
158	2741	Miscellaneous publishing	11,399.7	1.020	50	23,261.4	1.00
159	2752	Commercial printing, lithographic	43,849.1	1.021	67	66,844.5	1.99
160	2754	Commercial printing, gravure	3,895.1	1.010	85	4,628.8	1.00
161	2759	Commercial printing, n.e.c.	10,651.7	0.986	52	20,195.3	1.67
162	2761	Manifold business forms	6,304.6	0.998	65	9,684.6	1.20
163	2771	Greeting cards	4,027.0	1.004	62	6,521.4	1.00
164	2782	Blankbooks and looseleaf binders	3,723.6	1.014	53	7,122.6	1.22
165	2789	Bookbinding and related work	1,349.7	0.989	60	2,224.2	1.46
166	2791	Typesetting	1,505.0	0.979	50	2,945.4	1.00
167	2796	Platemaking services	3,437.3	1.034	68	5,228.8	1.64
168	2812	Alkalies and chlorine	2,010.9	1.014	96	2,123.7	1.00
169	2813	Industrial gases	3,141.5	1.008	58	5,457.7	1.00
170	2816	Inorganic pigments	3,383.5	1.052	80	4,450.1	1.00
171	2819	Industrial inorganic chemicals, n.e.c.	15,628.6	1.042	57	28,583.4	1.00
172	2821	Plastics materials and resins	35,003.2	1.020	81	44,063.9	1.39
173	2822	Synthetic rubber	4,750.1	0.998	91	5,210.0	1.00
174	2823	Cellulosic manmade fibers	1,224.1	1.031	66	1,912.6	1.00
175	2824	Organic fibers, noncellulosic	11,988.3	1.014	90	13,508.9	1.00
176	2833	Medicinals and botanicals	5,549.4	0.990	80	6,865.5	1.00
177	2834	Pharmaceutical preparations	53,329.6	1.021	55	99,005.2	1.53
178	2835	Diagnostic substances	7,688.4	1.068	59	13,918.7	2.11
179	2836	Biological products, except diagnostic	5,279.9	1.127	90	6,609.6	1.00
180	2841	Soap and other detergents	14,376.6	0.978	52	27,041.4	1.02
181	2842	Polishes and sanitation goods	8,173.6	1.030	43	19,573.8	1.26
182	2843	Surface active agents	3,553.6	1.006	54	6,621.5	1.00
183	2844	Toilet preparations	19,329.9	0.999	68	28,389.1	1.12
184	2851	Paints and allied products	17,066.8	1.029	57	30,809.8	1.21
185	2861	Gum and wood chemicals	701.8	1.007	72	982.0	1.45
186	2865	Cyclic crudes and intermediates	10,852.0	1.003	86	12,656.6	1.00
187	2868	Industrial organic chemicals, n.e.c.	54,071.2	1.005	87	62,479.5	1.24
188	2873	Nitrogenous fertilizers	3,636.6	1.022	92	4,040.4	1.95
189	2874	Phosphatic fertilizers	4,165.0	0.993	98	4,219.8	1.00
190	2875	Fertilizers, mixing only	2,297.3	1.038	61	3,909.7	2.10
191	2879	Agricultural chemicals, n.e.c.	8,859.8	1.019	77	11,723.0	1.38
192	2891	Adhesives and sealants	5,513.9	1.014	65	8,601.3	1.42
193	2892	Explosives	914.9	0.932	70	1,217.5	1.16
194	2893	Printing ink	3,311.3	1.033	50	6,842.9	1.16
195	2895	Carbon black	652.8	1.009	96	686.2	1.00
196	2899	Chemical preparations, n.e.c.	10,849.5	1.041	67	16,860.3	1.86
197	2911	Petroleum refining	138,518.3	0.978	92	147,272.9	1.00
198	2951	Asphalt paving mixtures and blocks	4,500.2	1.029	37	12,511.5	1.28
199	2952	Asphalt felts and coating	4,083.6	1.040	69	6,152.1	1.15
200	2992	Lubricating oils and greases	5,252.9	1.051	39	14,149.5	1.50
201	2999	Petroleum and coal products, n.e.c.	894.1	1.065	82	1,161.2	1.00
202	3011	Tires and inner tubes	12,929.8	0.995	87	14,792.3	1.13
203	3021	Rubber and plastics footwear	936.0	0.995	60	1,551.6	1.00
204	3052	Rubber and plastics hose and belting	2,973.6	1.025	79	3,858.9	1.00
205	3053	Gaskets, packing, and sealing devices	3,949.2	1.009	63	6,326.0	1.71
206	3061	Mechanical rubber goods	5,184.6	1.043	58	9,322.8	1.02
207	3069	Fabricated rubber products, n.e.c.	7,491.2	1.011	78	9,705.2	1.85
208	3081	Unsupported plastics film and sheet	12,438.1	1.051	79	16,552.1	1.45
209	3082	Unsupported plastics profile shapes	3,829.8	1.060	86	4,722.5	1.25
210	3083	Laminated plastics plate and sheet	2,301.9	1.018	78	3,004.2	1.91
211	3084	Plastics pipe	3,001.7	1.057	77	4,119.8	1.53
212	3085	Plastics bottles	5,580.6	1.069	69	8,646.4	1.00
213	3086	Plastics foam products	10,602.1	1.046	51	21,742.3	1.28

Table 4.2. (contd)

Sector Num.	SIC	Sector Title	1994	1994:4	1994:4	1994:4	Optional
			Shipments (mill. 92\$)	Adj. Fac. Ratio	SPC CU (%)	Emer Cap (mill. 92\$)	Hrs. Adj. (multiplier)
214	3087	Custom compounding of purchased resins	5,608.2	1.087	74	8,237.8	1.34
215	3088	Plastics plumbing fixtures	1,313.1	1.090	38	3,767.8	1.29
216	3089	Plastics products, n.e.c.	53,253.6	1.059	74	76,223.9	1.11
217	3111	Leather tanning and finishing	2,756.0	1.069	68	4,331.8	2.21
218	3131	Footwear cut stock	314.0	0.973	31	985.8	1.12
219	3142	House slippers	203.3	1.045	54	393.5	1.74
220	3143	Men's footwear, except athletic	2,388.7	1.038	56	4,427.5	1.45
221	3144	Women's footwear, except athletic	927.2	0.985	53	1,723.2	2.09
222	3149	Women's footwear, except rubber, n.e.c.	303.7	1.035	55	571.3	2.37
223	3151	Leather gloves and mittens	136.3	1.061	50	289.3	1.97
224	3161	Luggage	978.2	0.976	51	1,871.2	1.91
225	3171	Women's handbags and purses	310.7	0.953	75	394.7	2.55
226	3172	Personal leather goods, n.e.c.	386.1	1.016	78	502.8	2.83
227	3199	Leather goods, n.e.c.	421.4	1.035	50	872.1	1.84
228	3211	Flat glass	2,369.0	1.037	95	2,586.5	1.00
229	3221	Glass containers	4,594.4	0.959	88	5,004.6	1.00
230	3229	Pressed and blown glass, n.e.c.	4,741.7	1.040	90	5,477.3	1.06
231	3231	Products of purchased glass	7,839.4	1.051	78	10,559.2	1.77
232	3241	Cement, hydraulic	4,270.2	1.021	91	4,790.8	1.00
233	3251	Brick and structural clay tile	1,243.9	1.020	84	1,510.9	1.37
234	3253	Ceramic wall and floor tile	828.8	1.019	91	927.7	1.07
235	3255	Clay refractories	920.9	0.973	66	1,357.5	1.30
236	3259	Structural clay products, n.e.c.	139.0	0.973	48	281.9	1.44
237	3261	Vitreous plumbing fixtures	1,004.4	1.030	79	1,308.9	1.32
238	3262	Vitreous china table and kitchenware	343.8	0.972	61	548.0	1.87
239	3263	Semivitreous table and kitchenware	51.4	0.995	50	102.2	1.66
240	3264	Porcelain electrical supplies	1,087.9	0.993	65	1,661.8	1.07
241	3269	Pottery products, n.e.c.	686.3	0.996	62	1,102.8	1.56
242	3271	Concrete block and brick	2,262.3	0.976	65	3,397.9	1.70
243	3272	Concrete products, n.e.c.	6,504.6	0.993	65	9,932.6	2.29
244	3273	Ready-mixed concrete	12,921.2	0.991	39	32,829.7	1.25
245	3274	Lime	1,031.0	1.026	73	1,449.1	1.00
246	3275	Gypsum products	2,147.5	0.992	95	2,242.4	1.00
247	3281	Cut stone and stone products	1,090.3	0.990	60	1,799.5	2.23
248	3291	Abrasive products	3,993.4	0.975	71	5,484.7	1.00
249	3292	Asbestos products	0.1	0.272	74	0.0	2.92
250	3295	Minerals, ground or treated	1,770.5	1.011	68	2,632.9	1.53
251	3296	Mineral wool	3,427.6	1.006	67	5,146.4	1.31
252	3297	Nonclay refractories	1,231.7	1.024	53	2,379.7	1.70
253	3299	Nonmetallic mineral products, n.e.c.	817.2	1.038	59	1,437.1	1.10
254	3312	Blast furnaces and steel mills	47,780.6	0.968	90	51,382.6	1.00
255	3313	Electrometallurgical products	1,230.3	0.966	69	1,722.0	1.00
256	3315	Steel wire and related products	4,766.0	0.978	80	5,827.8	1.01
257	3316	Cold finishing of steel shapes	6,139.4	0.970	80	7,443.9	1.44
258	3317	Steel pipe and tubes	5,831.2	0.967	68	8,293.3	1.00
259	3321	Gray and ductile iron foundries	9,323.3	1.037	72	13,429.8	1.29
260	3322	Malleable iron foundries	279.2	1.003	84	333.4	1.23
261	3324	Steel investment foundries	1,547.6	1.007	64	2,435.4	1.30
262	3325	Steel foundries, n.e.c.	2,391.8	1.007	65	3,703.6	1.34
263	3331	Primary copper	6,075.1	1.118	89	7,632.8	1.06
264	3334	Primary aluminum	4,846.4	0.970	85	5,530.2	1.00
265	3339	Primary nonferrous metals, n.e.c.	2,784.4	0.918	65	3,931.8	1.00
266	3341	Secondary nonferrous metals	6,425.3	1.012	83	7,832.4	1.03
267	3351	Copper rolling and drawing	7,256.8	0.972	85	8,301.3	1.00
268	3353	Aluminum sheet, plate, and foil	10,254.7	0.984	86	11,736.4	1.00
269	3354	Aluminum extruded products	4,715.2	1.003	83	5,699.7	1.06
270	3355	Aluminum rolling and drawing, n.e.c.	537.5	1.059	82	694.1	1.00
271	3356	Nonferrous rolling and drawing, n.e.c.	3,090.4	0.970	73	4,108.0	1.16
272	3357	Nonferrous wire drawing and insulating	14,949.7	0.990	63	23,495.8	1.00
273	3363	Aluminum die castings	3,536.2	1.010	77	4,640.5	1.10
274	3364	Nonferrous die castings, except aluminum	1,122.8	0.992	56	1,989.0	1.00
275	3365	Aluminum foundries	2,518.1	1.023	63	4,087.9	1.18
276	3366	Copper foundries	737.6	0.991	60	1,218.0	1.94
277	3369	Nonferrous foundries, n.e.c.	447.1	0.970	66	657.1	1.93
278	3398	Metal heat treating	2,358.0	0.990	78	2,993.6	1.04
279	3399	Primary metal products, n.e.c.	2,315.2	1.000	72	3,215.9	1.00
280	3411	Metal cans	12,498.4	1.000	84	14,874.2	1.00
281	3412	Metal barrels, drums, and pails	1,323.8	0.978	48	2,697.1	1.53
282	3421	Cutlery	1,768.6	1.017	85	2,115.7	1.60
283	3423	Hand and edge tools, n.e.c.	4,674.4	1.001	69	6,780.0	1.73
284	3425	Handsaws and saw blades	993.8	1.042	73	1,418.5	1.49

Table 4.2. (contd)

Sector Num.	SIC	Sector Title	1994	1994:4	1994:4	1994:4	Optional
			Shipments (mill. 92\$)	Adj. Fac. Ratio	SPC CU (%)	Emer Cap (mill. 92\$)	Hrs. Adj. (multiplier)
285	3429	Hardware, n.e.c.	10,174.7	1.003	58	17,586.8	1.55
286	3431	Metal sanitary ware	845.7	0.961	84	967.7	1.65
287	3432	Plumbing fixture fittings and trims	3,037.0	1.017	55	5,614.3	1.40
288	3433	Heating equipment except electric	2,675.8	1.018	49	5,560.7	1.40
289	3441	Fabricated structural metal	9,437.2	0.996	50	18,796.3	1.42
290	3442	Metal doors, sash, and trim	7,520.3	1.013	62	12,292.7	1.53
291	3443	Fabricated plate work (boiler shops)	10,010.8	0.998	63	15,865.9	1.62
292	3444	Sheet metal work	12,810.4	1.027	52	25,304.9	1.47
293	3446	Architectural metal work	2,438.0	0.989	51	4,726.2	1.35
294	3448	Prefabricated metal buildings	3,532.1	1.024	53	6,824.6	1.53
295	3449	Miscellaneous metal work	3,787.2	1.007	57	6,693.6	1.14
296	3451	Screw machine products	4,572.5	1.059	53	9,137.4	1.30
297	3452	Bolts, nuts, rivets, and washers	5,673.3	1.000	65	8,724.5	1.11
298	3462	Iron and steel forgings	3,569.6	1.004	65	5,511.9	1.26
299	3463	Nonferrous forgings	1,292.5	1.065	68	2,025.2	1.12
300	3465	Automotive stampings	19,554.6	1.062	78	26,636.2	1.47
301	3466	Crowns and closures	825.5	1.044	71	1,214.4	1.00
302	3469	Metal stampings, n.e.c.	11,264.9	1.034	59	19,744.2	1.56
303	3471	Plating and polishing	5,020.3	1.049	60	8,780.4	1.57
304	3479	Metal coating and allied services	6,996.3	1.041	58	12,552.3	1.43
305	3482	Small arms ammunition	939.1	1.009	41	2,310.1	1.00
306	3483	Ammunition, except for small arms, n.e.c.	1,893.7	0.947	54	3,321.6	1.38
307	3484	Small arms	1,323.8	1.026	71	1,912.0	1.36
308	3489	Ordnance and accessories, n.e.c.	1,183.1	0.958	42	2,697.8	1.48
309	3491	Industrial valves	7,294.0	1.032	69	10,908.2	1.33
310	3492	Fluid power valves and hose fittings	4,137.7	1.009	52	8,027.2	1.22
311	3493	Steel springs, except wire	591.9	1.011	71	842.9	1.33
312	3494	Valves and pipe fittings, n.e.c.	2,060.8	0.934	73	2,636.0	1.27
313	3495	Wire springs	2,029.6	1.024	71	2,928.4	1.79
314	3496	Miscellaneous fabricated wire products	3,935.8	1.044	62	6,625.2	1.53
315	3497	Metal foil and leaf	3,283.6	1.026	64	5,265.6	1.00
316	3498	Fabricated pipe and fittings	3,062.7	1.053	59	5,463.9	1.75
317	3499	Fabricated metal products, n.e.c.	7,886.1	1.021	51	15,783.5	1.42
318	3511	Turbines and turbine generator sets	6,588.3	1.032	82	8,294.6	1.06
319	3519	Internal combustion engines, n.e.c.	14,476.4	1.014	75	19,579.3	1.32
320	3523	Farm machinery and equipment	12,528.3	1.029	72	17,905.6	1.95
321	3524	Lawn and garden equipment	6,654.1	1.053	60	11,675.9	1.18
322	3531	Construction machinery	17,016.2	1.027	69	25,329.8	1.28
323	3532	Mining machinery	1,637.5	1.032	44	3,842.3	1.00
324	3533	Oil and gas field machinery	3,651.7	0.996	57	6,382.2	1.36
325	3534	Elevators and moving stairways	1,030.1	0.976	52	1,933.6	1.01
326	3535	Conveyors and conveying equipment	4,537.2	1.031	60	7,798.8	1.65
327	3536	Hoist, cranes, and monorails	1,006.5	1.006	74	1,368.1	1.73
328	3537	Industrial trucks and tractors	3,901.8	1.056	56	7,360.1	1.79
329	3541	Machine tools, metal cutting types	3,548.3	1.016	64	5,632.8	1.35
330	3542	Machine tools, metal forming types	1,614.3	1.040	51	3,290.4	1.63
331	3543	Industrial patterns	585.9	1.046	63	972.8	1.96
332	3544	Special dies, tools, jigs and fixtures	10,670.6	1.030	62	17,733.1	1.52
333	3545	Machine tool accessories	4,516.4	0.998	67	6,728.4	1.39
334	3546	Power driven handtools	3,341.0	1.065	61	5,833.7	1.13
335	3547	Rolling mill machinery	513.4	1.020	49	1,069.2	1.31
336	3548	Welding apparatus	2,866.5	1.034	68	4,359.6	1.11
337	3549	Metalworking machinery, n.e.c.	2,367.2	1.070	59	4,292.4	1.57
338	3552	Textile machinery	1,832.2	1.045	49	3,906.7	1.55
339	3553	Woodworking machinery	1,126.4	1.038	42	2,784.9	1.25
340	3554	Paper industries machinery	2,704.6	1.017	76	3,618.3	1.45
341	3555	Printing trades machinery	2,883.7	0.945	51	5,341.9	1.33
342	3556	Food products machinery	2,524.5	1.026	58	4,464.9	1.49
343	3559	Special industry machinery, n.e.c.	14,594.8	1.032	56	26,888.8	1.46
344	3561	Pumps and pumping equipment	5,578.3	0.952	72	7,378.1	1.97
345	3562	Ball and roller bearings	4,701.4	1.022	86	5,588.1	1.26
346	3563	Air and gas compressors	4,840.6	0.947	65	7,051.1	1.24
347	3564	Blowers and fans	3,301.9	0.967	55	5,804.4	1.15
348	3565	Packaging machinery	3,430.6	0.973	51	6,547.2	1.42
349	3566	Speed changers, drives, and gears	1,905.5	0.997	65	2,921.8	1.13
350	3567	Industrial furnaces and ovens	2,079.6	0.979	41	4,964.9	1.09
351	3568	Power transmission equipment, n.e.c.	2,633.7	0.943	67	3,706.6	1.05
352	3569	General industrial machinery, n.e.c.	5,879.9	0.960	48	11,763.1	1.43
353	3571	Electronic computers	64,939.1	1.081	57	123,117.2	1.19
354	3572	Computer storage devices	14,014.8	1.095	93	16,498.4	1.34
355	3575	Computer terminals	1,588.5	0.964	50	3,063.5	1.00

Table 4.2. (contd)

Sector Num.	SIC	Sector Title	1994 Shipments (mill. \$2\$)	1994:4 Adj. Fac. Ratio	1994:4 SPC CU (%)	1994:4 Emer Cap (mill. \$2\$)	Optional Hrs. Adj. (multiplier)
356	3577	Computer peripheral equipment, n.e.c.	15,606.3	1.093	59	28,904.7	1.57
357	3578	Calculating and accounting machines	1,348.9	1.026	47	2,944.6	1.32
358	3579	Office machines, n.e.c.	3,587.2	1.034	53	6,998.6	1.36
359	3581	Automatic vending machines	938.7	0.961	60	1,504.0	1.87
360	3582	Commercial laundry equipment	583.4	0.926	74	730.2	2.41
361	3585	Refrigeration and heating equipment	23,951.0	0.957	71	32,272.5	1.98
362	3586	Measuring and dispensing pumps	1,238.1	0.965	64	1,867.2	1.00
363	3589	Service industry machinery, n.e.c.	5,975.9	0.957	56	10,208.7	1.72
364	3592	Carburetors, pistons, rings, and valves	2,610.7	1.035	89	3,035.9	2.18
365	3593	Fluid power cylinders and actuators	2,314.2	1.006	55	4,231.5	1.07
366	3594	Fluid power pumps and motors	1,549.0	0.964	80	1,867.4	1.17
367	3596	Scales and balances, except laboratory	692.7	0.998	53	1,304.9	1.80
368	3599	Industrial machinery, n.e.c.	23,337.3	1.029	60	40,039.6	1.78
369	3612	Transformers, except electronic	4,670.9	1.022	65	7,345.7	1.26
370	3613	Switchgear and switchboard apparatus	5,869.0	1.033	51	11,885.9	1.58
371	3621	Motors and generators	9,199.2	1.049	59	16,350.8	1.37
372	3624	Carbon and graphite products	1,424.9	1.027	81	1,806.4	1.27
373	3625	Relays and industrial controls	9,202.9	1.044	58	16,571.4	1.45
374	3629	Electrical industrial apparatus, nec	2,251.0	1.088	44	5,567.4	1.28
375	3631	Household cooking equipment	3,718.4	0.975	64	5,663.0	1.09
376	3632	Household refrigerators and freezers	5,067.3	1.100	58	9,613.6	1.00
377	3633	Household laundry equipment	4,625.5	1.068	84	5,880.3	1.48
378	3634	Electric housewares and fans	3,054.6	1.022	70	4,460.3	1.61
379	3635	Household vacuum cleaners	1,845.8	0.973	64	2,806.9	1.14
380	3639	Household appliances, n.e.c.	4,005.0	0.994	89	4,474.7	1.10
381	3641	Electric lamp bulbs and tubes	2,855.4	1.023	66	4,427.1	1.27
382	3643	Current-carrying wiring devices	4,716.8	1.029	67	7,244.1	1.70
383	3644	Noncurrent-carrying wiring devices	3,500.1	1.047	55	6,663.6	1.27
384	3645	Residential lighting fixtures	1,737.4	1.052	36	5,077.5	1.38
385	3646	Commercial lighting fixtures	3,414.1	1.023	56	6,235.3	2.01
386	3647	Vehicular lighting equipment	2,728.5	1.060	75	3,855.2	1.52
387	3648	Lighting equipment, n.e.c.	2,673.1	1.062	57	4,978.5	1.21
388	3651	Household audio and video equipment	10,485.8	1.054	61	18,111.3	2.26
389	3652	Prerecorded records and tapes	2,381.8	1.039	81	3,055.0	1.05
390	3681	Telephone and telegraph apparatus	22,257.3	1.037	61	37,828.5	1.14
391	3682	Radio and television communication equip.	20,350.6	1.018	50	41,419.3	1.33
392	3683	Communications equipment, n.e.c.	3,621.1	1.068	41	9,429.5	1.21
393	3671	Electron tubes	3,123.4	1.005	64	4,907.1	1.20
394	3672	Printed circuit boards	8,774.2	1.010	68	13,035.5	1.62
395	3674	Semiconductors and related devices	55,406.2	1.055	84	69,604.9	1.67
396	3675	Electronic capacitors	1,910.5	1.004	76	2,524.5	1.05
397	3676	Electronic resistors	772.6	0.979	40	1,890.9	1.00
398	3677	Electronic coils and transformers	1,340.3	0.996	60	2,225.2	1.64
399	3678	Electronic connectors	4,209.7	0.992	57	7,322.8	1.11
400	3679	Electronic components, n.e.c.	31,920.4	1.040	58	57,215.3	1.83
401	3691	Storage batteries	3,998.6	1.018	78	5,218.5	1.26
402	3692	Primary batteries, dry and wet	1,861.9	1.034	86	2,916.2	1.03
403	3694	Engine electrical equipment	8,452.8	1.025	52	16,665.8	1.00
404	3695	Magnetic and optical recording media	5,838.6	1.007	71	8,283.4	1.00
405	3699	Electrical equipment and supplies, n.e.c.	5,103.7	0.956	41	11,903.7	1.46
406	3711	Motor vehicles and car bodies	182,916.3	1.081	62	313,036.7	2.12
407	3713	Truck and bus bodies	6,426.2	1.078	52	13,325.1	1.59
408	3714	Motor vehicle parts and accessories	99,881.2	1.033	61	169,115.8	1.52
409	3715	Truck trailers	4,999.6	1.101	78	7,060.1	2.23
410	3716	Motor homes	3,869.5	1.118	36	12,016.8	1.28
411	3721	Aircraft	48,442.5	0.971	44	106,902.5	1.00
412	3724	Aircraft engines and engine parts	15,881.2	0.948	48	31,381.3	1.00
413	3728	Aircraft parts and equipment, n.e.c.	16,330.8	0.960	41	38,230.2	1.31
414	3731	Ship building and repairing	9,390.2	1.001	50	18,803.5	1.00
415	3732	Boat building and repairing	5,231.3	1.067	53	10,531.3	2.00
416	3743	Railroad equipment	6,307.4	1.026	48	13,479.2	1.32
417	3751	Motorcycles, bicycles, and parts	2,546.6	1.104	74	3,798.1	1.05
418	3761	Guided missiles and space vehicles	15,351.8	0.924	73	19,441.0	1.37
419	3764	Space propulsion units and parts	3,347.8	1.086	48	7,574.1	1.00
420	3769	Space vehicle equipment, n.e.c.	1,725.0	1.006	41	4,232.4	1.32
421	3792	Travel trailers and campers	2,645.7	1.089	25	11,521.2	1.00
422	3795	Tanks and tank components	1,490.8	1.028	31	4,945.2	1.00
423	3799	Transportation equipment, n.e.c.	3,846.0	1.109	44	9,693.1	1.51
424	3812	Search and navigation equipment	29,340.3	0.984	42	68,720.5	1.27
425	3821	Laboratory apparatus and furniture	2,228.5	1.033	49	4,697.9	1.55
426	3822	Environmental controls	2,723.3	1.035	42	6,708.3	1.44

Table 4.2. (contd)

Sector Num.	SIC	Sector Title	1994 Shipments (mill. \$2\$)	1994:4 Adj. Fac. Ratio	1994:4 SPC CU (%)	1994:4 Emer Cap (mill. \$2\$)	Optional Hrs. Adj. (multiplier)
427	3823	Process control instruments	6,783.1	1.014	48	14,330.7	1.30
428	3824	Fluid meters and counting devices	3,196.1	1.047	62	5,398.9	1.49
429	3825	Instruments to measure electricity	9,804.4	1.013	50	19,855.5	1.53
430	3826	Analytical instruments	5,861.9	1.026	49	12,277.5	1.68
431	3827	Optical instruments and lenses	2,615.6	1.019	48	5,554.3	1.51
432	3829	Measuring and controlling devices, n.e.c.	4,344.1	0.997	52	8,328.0	1.50
433	3841	Surgical and medical instruments	14,434.8	1.048	51	29,673.7	1.68
434	3842	Surgical appliances and supplies	13,661.5	1.009	50	27,563.3	1.52
435	3843	Dental equipment and supplies	2,134.5	1.022	50	4,363.5	1.43
436	3844	X ray apparatus and tubes	3,327.5	1.012	55	6,121.7	1.77
437	3845	Electromedical equipment	7,764.9	1.019	59	13,417.0	1.97
438	3851	Ophthalmic goods	2,869.3	1.030	64	4,619.9	2.06
439	3861	Photographic equipment and supplies	23,469.0	1.007	74	31,946.5	1.77
440	3873	Watches, clocks, watchcases, and parts	802.1	0.920	59	1,250.2	1.00
441	3911	Jewelry, precious metal	4,333.9	1.007	55	7,936.0	1.65
442	3914	Silverware and plated ware	713.6	0.949	48	1,411.5	1.05
443	3915	Jewelers' materials and lapidary work	864.8	1.012	48	1,824.1	1.76
444	3931	Musical instruments	974.8	1.003	42	2,326.8	1.56
445	3942	Dolls and stuffed toys	234.0	0.880	50	411.9	1.90
446	3944	Games, toys, and children's vehicles	4,282.6	1.021	51	8,574.4	1.32
447	3949	Sporting and athletic goods, n.e.c.	8,737.9	1.016	60	14,801.1	2.12
448	3951	Pens and mechanical pencils	1,182.2	1.021	32	3,773.0	1.00
449	3952	Lead pencils and art goods	1,058.4	1.056	89	1,255.3	2.60
450	3953	Marking devices	712.4	1.016	82	883.1	3.04
451	3955	Carbon paper and inked ribbons	955.1	1.001	56	1,706.5	1.05
452	3961	Costume jewelry	1,603.3	0.988	54	2,933.4	1.49
453	3964	Needles, pins, buttons, and fasteners	879.8	1.002	77	1,145.2	2.56
454	3991	Brooms and brushes	1,438.9	1.039	47	3,182.2	1.47
455	3993	Signs and advertising specialties	5,895.1	1.041	49	12,525.9	1.80
456	3995	Burial caskets	1,042.8	0.998	79	1,316.7	2.93
457	3996	Hard surface floor coverings, n.e.c.	1,615.7	1.029	79	2,104.6	1.06
458	3999	Manufacturing industries, n.e.c.	6,183.6	1.037	46	13,941.1	1.33

Table 4.3. Capacity Forecasts: 1994-2005

Sector Num.	SIC	Sector Title	Fourth Quarter Emergency Capacity (millions of 1992\$)											
			1994.4	1995.4	1996.4	1997.4	1998.4	1999.4	2000.4	2001.4	2002.4	2003.4	2004.4	2005.4
1	2011	Meatpacking plants	66,824.3	67,861.9	69,119.4	70,085.1	70,589.6	71,070.5	71,729.0	72,378.5	73,106.0	73,889.6	74,617.8	75,325.9
2	2013	Sausages and other prepared meats	28,577.9	29,030.6	29,739.8	30,387.3	31,163.7	31,849.3	32,539.9	33,275.6	34,046.0	34,803.2	35,563.3	36,325.7
3	2015	Poultry slaughtering and processing	34,020.9	34,559.9	35,363.0	36,011.3	36,817.8	37,659.9	38,539.9	39,458.5	40,417.8	41,419.3	42,456.8	43,533.3
4	2021	Creamery butter	1,415.8	1,381.4	1,328.9	1,255.8	1,171.8	1,050.0	1,005.9	974.7	949.3	926.6	906.8	888.8
5	2022	Cheese, natural and processed	21,771.7	22,307.6	22,788.0	23,220.0	23,594.1	23,908.8	24,169.1	24,376.8	24,536.8	24,653.3	24,728.3	24,763.9
6	2023	Dry, condensed and evap. dairy products	10,159.5	10,159.5	10,159.5	10,133.3	10,133.3	10,169.4	10,208.4	10,248.4	10,288.4	10,328.4	10,368.4	10,408.4
7	2024	Ice cream and frozen desserts	8,618.5	8,877.4	9,134.7	9,387.7	9,626.0	9,893.1	10,186.8	10,497.7	10,802.3	11,125.6	11,484.2	11,843.2
8	2026	Fluid milk	28,005.7	28,853.8	29,653.1	30,369.5	30,947.6	31,518.7	32,101.9	32,569.1	32,954.9	33,327.5	33,753.4	34,193.6
9	2032	Canned specialties	12,466.7	12,670.9	12,848.7	12,944.4	13,031.8	13,142.8	13,183.8	13,253.7	13,309.9	13,384.7	13,461.0	13,530.3
10	2033	Canned fruits and vegetables	25,162.6	25,162.6	26,209.8	27,181.6	28,294.7	29,591.3	29,835.6	29,957.7	30,120.4	30,285.4	30,453.8	30,628.2
11	2034	Dehydrated fruits, vegetables, and soups	4,048.5	4,069.1	4,092.1	4,092.9	4,309.5	4,383.3	4,435.4	4,497.7	4,555.4	4,619.8	4,685.0	4,748.2
12	2035	Pickles, sauces, and salad dressings	13,708.1	14,482.0	15,174.0	15,707.3	16,182.8	16,641.3	17,057.1	17,519.7	17,971.3	18,457.1	18,954.8	19,451.6
13	2037	Frozen fruits and vegetables	9,952.4	10,249.7	10,515.4	10,676.6	10,813.4	10,952.2	11,032.9	11,137.8	11,230.9	11,339.6	11,449.7	11,553.6
14	2038	Frozen specialties, n.e.c.	13,000.6	13,418.3	13,772.1	14,030.8	14,303.2	14,585.8	14,784.9	15,015.2	15,229.1	15,464.6	15,703.1	15,934.4
15	2041	Flour, and other grain mill products	8,478.5	8,748.0	8,968.5	9,112.8	9,240.1	9,381.5	9,469.4	9,569.1	9,658.2	9,763.3	9,872.9	9,978.1
16	2043	Cereal breakfast foods	15,612.9	16,142.2	16,556.0	16,915.2	17,040.4	17,274.0	17,395.6	17,525.6	17,623.5	17,742.2	17,873.4	17,995.4
17	2044	Rice milling	2,049.9	2,133.1	2,210.1	2,275.0	2,340.5	2,405.2	2,475.9	2,541.2	2,603.4	2,668.6	2,736.8	2,805.4
18	2045	Prepared flour mixes and doughs	5,683.7	5,874.5	6,053.3	6,201.2	6,359.9	6,543.5	6,702.0	6,881.9	7,061.3	7,253.0	7,450.5	7,647.3
19	2046	Wet corn milling	7,373.7	7,616.7	7,837.8	8,017.6	8,204.4	8,421.0	8,617.3	8,834.1	9,049.0	9,275.9	9,510.5	9,747.0
20	2047	Dog and cat food	8,420.6	8,420.6	8,420.6	8,420.6	8,446.2	8,541.3	8,624.8	8,735.5	8,838.6	8,953.6	9,070.2	9,183.7
21	2048	Prepared feeds, n.e.c.	26,683.1	27,004.8	27,398.4	27,738.3	28,178.4	28,794.0	29,337.7	29,965.0	30,567.1	31,215.5	31,892.0	32,544.7
22	2051	Bread, cake, and related products	28,074.3	27,724.3	27,587.1	27,465.2	27,296.9	27,296.9	26,994.5	26,681.6	26,395.8	26,136.8	25,862.3	25,566.2
23	2052	Cookies and crackers	14,433.3	14,966.2	15,658.9	16,455.2	17,155.7	17,754.5	18,353.8	18,941.0	19,543.4	20,157.4	20,756.0	21,348.1
24	2053	Frozen bakery products, except bread	3,063.9	3,261.6	3,584.6	3,929.8	4,186.1	4,430.1	4,657.4	4,890.6	5,137.5	5,397.0	5,663.1	5,938.4
25	2061	Raw cane sugar	1,595.6	1,635.8	1,675.5	1,713.0	1,748.5	1,782.0	1,820.6	1,852.2	1,891.2	1,944.4	1,978.3	2,005.2
26	2062	Cane sugar refining	3,502.0	3,490.1	3,457.0	3,404.6	3,339.5	3,263.1	3,178.7	3,109.9	3,052.9	3,005.5	2,968.6	2,935.2
27	2063	Beet sugar	2,627.1	2,721.2	2,819.5	2,917.8	3,014.7	3,122.2	3,228.8	3,329.8	3,422.5	3,518.6	3,616.0	3,718.8
28	2064	Candy and other confectionary products	17,647.6	17,991.5	18,315.7	18,603.9	18,868.3	19,138.3	19,445.3	19,769.1	20,105.9	20,448.6	20,805.0	21,174.3
29	2066	Chocolate and cocoa products	4,358.8	4,361.4	4,352.1	4,331.9	4,331.9	4,310.8	4,310.8	4,293.3	4,293.3	4,290.8	4,290.5	4,290.5
30	2068	Salted and roasted nuts and seeds	4,930.0	5,077.6	5,237.3	5,402.6	5,574.9	5,745.1	5,907.2	6,061.4	6,194.1	6,329.9	6,474.4	6,623.0
31	2074	Cottonseed oil mills	667.6	691.9	705.3	706.6	706.6	706.6	706.6	709.5	718.2	733.3	748.0	762.9
32	2075	Soybean oil mills	13,204.6	13,574.4	13,958.4	14,356.9	14,756.5	15,193.2	15,647.6	16,176.5	16,737.7	17,325.5	17,923.1	18,534.0
33	2076	Vegetable oil mills, n.e.c.	794.3	816.6	833.7	848.4	862.9	868.6	879.9	884.7	898.0	908.6	948.6	982.7
34	2077	Animal and marine fats and oils	2,741.7	2,818.5	2,872.5	2,909.7	2,935.0	2,935.0	2,935.0	2,935.0	2,935.0	2,935.0	2,980.4	3,027.8
35	2079	Edible fats and oils, n.e.c.	6,889.9	7,082.9	7,220.0	7,317.5	7,387.1	7,387.1	7,387.1	7,387.1	7,387.1	7,387.1	7,521.4	7,659.5
36	2082	Malt beverages	23,440.3	23,852.3	24,235.1	24,538.4	24,860.5	25,258.5	25,634.2	26,081.8	26,506.7	26,952.7	27,414.9	27,895.2
37	2083	Malt	562.3	553.7	543.3	531.4	521.8	521.8	515.9	510.8	505.7	501.3	497.5	494.1
38	2084	Wines, brandy, and brandy spirits	10,043.9	10,043.9	10,043.9	10,043.9	10,055.0	10,152.4	10,305.0	10,493.2	10,691.7	10,897.6	11,108.0	11,321.5
39	2085	Distilled and blended liquors	9,696.2	9,549.5	9,375.4	9,375.4	9,375.4	9,339.3	9,339.3	9,339.3	9,328.1	9,328.1	9,328.1	9,347.8
40	2086	Bottled and canned soft drinks	44,846.1	45,438.0	46,007.8	46,541.4	47,112.2	47,678.8	48,125.8	48,474.7	48,647.3	48,846.8	49,062.7	49,276.8
41	2087	Flavoring extracts and syrups, n.e.c.	14,264.4	14,946.2	15,681.7	16,444.2	16,027.1	16,776.4	19,603.8	20,478.9	21,408.9	22,390.9	23,417.5	24,475.8
42	2091	Canned and cured fish and seafoods	1,740.2	1,764.3	1,818.4	1,871.3	1,925.9	1,951.3	1,974.4	2,012.8	2,070.0	2,150.5	2,211.2	2,296.8
43	2092	Fresh or frozen prepared fish	15,514.5	15,590.1	15,656.6	15,994.5	16,071.3	16,211.9	16,359.6	16,559.6	16,761.1	17,074.2	17,419.8	17,790.1
44	2095	Roasted coffee	7,855.1	7,902.1	7,939.9	8,106.4	8,274.3	8,321.5	8,354.6	8,402.3	8,447.3	8,517.2	8,602.4	8,689.8
45	2096	Potato chips and similar snacks	11,876.3	12,367.8	12,861.4	13,328.5	13,775.8	14,237.0	14,671.2	15,085.9	15,495.8	15,916.2	16,345.0	16,781.2

Table 4.3. (contd)

Sector Numl.	SIC	Sector Title	1994:4	1995:4	1996:4	1997:4	1998:4	1999:4	2000:4	2001:4	2002:4	2003:4	2004:4	2005:4
46	2097	Manufactured ice	999.6	1,011.9	1,021.8	1,028.1	1,032.4	1,051.4	1,073.8	1,094.7	1,112.1	1,127.1	1,142.9	1,159.1
47	2098	Mecaroni and spaghetti	1,648.3	1,659.7	1,693.7	1,719.5	1,739.6	1,755.8	1,765.6	1,765.6	1,753.5	1,753.5	1,759.5	1,765.0
48	2099	Food preparations, n.e.c.	23,864.3	24,376.0	24,856.4	25,268.3	25,640.9	26,021.0	26,302.3	26,587.4	26,791.4	26,979.9	27,191.4	27,411.9
49	2111	Cigarettes	37,242.5	38,120.8	38,990.8	39,823.4	40,567.9	41,298.7	41,905.8	42,481.2	42,984.5	43,357.0	43,842.1	44,347.1
50	2121	Cigars	563.8	577.1	589.2	599.9	608.6	616.8	622.9	633.4	639.4	637.3	643.3	650.6
51	2131	Chewing and smoking tobacco	2,682.8	2,761.9	2,819.7	2,872.3	2,908.4	2,920.3	2,951.6	2,982.6	3,018.1	3,056.1	3,091.6	3,126.5
52	2141	Tobacco stemming and redefying	5,169.2	5,321.7	5,514.5	5,733.9	6,115.4	6,456.3	6,858.0	7,223.9	7,601.2	7,982.7	8,355.8	8,723.6
53	2211	Broadwoven fabrics mills, cotton	6,548.9	6,548.9	6,609.6	6,733.9	6,920.5	7,140.6	7,362.9	7,548.9	7,704.1	7,818.3	7,888.5	7,918.6
54	2221	Broadwoven fabrics mills, manmade fiber	11,912.5	12,149.6	12,480.3	12,892.2	13,374.8	13,898.8	14,409.9	14,950.8	15,377.9	15,725.3	15,995.0	16,205.1
55	2231	Broadwoven fabrics mills, wool	2,425.6	2,541.2	2,651.5	2,743.9	2,805.4	2,902.6	3,029.7	3,157.5	3,282.4	3,389.6	3,477.4	3,550.4
56	2241	Narrow fabrics mills	2,017.9	2,114.1	2,193.5	2,246.1	2,261.5	2,296.7	2,350.3	2,399.1	2,444.0	2,475.9	2,498.0	2,518.9
57	2251	Women's hosiery, except socks	2,429.3	2,429.3	2,410.2	2,222.1	2,029.1	1,844.2	1,661.8	1,494.7	1,340.7	1,192.4	1,057.5	930.9
58	2252	Hosiery, n.e.c.	3,886.2	4,156.2	4,317.1	4,383.0	4,394.9	4,394.9	4,394.9	4,338.5	4,053.2	4,053.2	4,054.0	4,064.4
59	2253	Knit outerwear mills	7,038.7	7,855.9	8,462.4	8,869.9	9,149.4	9,396.0	9,542.6	9,711.3	9,921.0	10,199.7	10,516.8	10,865.0
60	2254	Knit underwear mills	1,381.2	1,381.2	1,233.7	1,098.8	979.4	878.5	788.4	710.1	631.9	565.8	499.9	438.9
61	2257	Wet knit fabrics mills	7,291.7	8,119.8	8,743.1	9,172.0	9,478.7	9,764.5	9,943.9	10,163.3	10,434.3	10,753.0	11,119.1	11,519.6
62	2258	Lace and warp knit fabrics mills	3,260.7	3,399.9	3,457.3	3,447.1	3,402.8	3,361.7	3,092.5	2,815.6	2,553.9	2,318.7	2,111.7	1,917.1
63	2259	Knitting mills, n.e.c.	278.0	288.5	293.0	293.0	291.5	288.6	284.1	262.8	241.6	222.1	204.6	188.0
64	2261	Finishing plants, cotton	3,828.3	4,450.4	5,009.7	5,537.5	6,055.2	6,549.6	7,041.6	7,566.4	8,107.9	8,653.9	9,194.7	9,740.5
65	2262	Finishing plants, manmade	4,269.5	4,269.5	3,821.5	3,206.1	2,714.8	2,256.4	1,840.5	1,451.6	1,083.5	731.9	394.6	387.3
66	2269	Finishing plants, n.e.c.	1,415.6	1,415.6	1,299.9	1,293.9	1,266.0	1,245.3	1,084.0	931.0	783.0	640.3	502.1	387.3
67	2273	Carpets and rugs	15,231.3	15,231.3	15,231.3	15,441.4	15,845.6	16,424.4	16,904.7	17,306.6	17,657.6	18,008.8	18,393.5	18,893.3
68	2281	Yarn spinning mills	9,228.0	9,628.4	10,000.6	10,305.2	10,563.8	10,812.0	10,997.4	11,150.8	11,280.2	11,403.1	11,536.4	11,683.3
69	2282	Throwing and winding mills	3,832.7	4,121.4	4,407.7	4,676.6	4,931.0	5,193.3	5,437.0	5,672.8	5,905.1	6,138.7	6,381.3	6,634.6
70	2284	Thread mills	1,157.0	1,201.8	1,241.4	1,275.2	1,303.5	1,331.3	1,351.4	1,367.3	1,379.9	1,391.7	1,404.7	1,419.4
71	2295	Coated fabrics, not rubberized	3,640.0	3,692.1	3,745.9	3,798.9	3,853.9	3,914.9	3,903.0	3,869.7	3,809.9	3,717.6	3,628.8	3,628.8
72	2296	Tire cord and fabrics	889.2	941.8	893.7	846.5	802.9	760.2	720.0	682.1	647.6	616.9	585.9	557.2
73	2297	Nonwoven fabrics	4,085.7	4,252.1	4,408.8	4,539.8	4,648.3	4,761.0	4,871.2	4,980.1	5,072.3	5,142.1	5,191.2	5,241.9
74	2298	Cordage and twine	1,137.9	1,169.2	1,200.8	1,231.2	1,260.4	1,288.0	1,315.9	1,342.8	1,363.5	1,380.8	1,393.1	1,405.7
75	2299	Textile goods, n.e.c.	3,133.6	3,325.9	3,545.2	3,785.6	4,046.1	4,313.5	4,594.1	4,857.3	5,110.5	5,354.0	5,595.2	5,849.7
76	2311	Men's and boys' suits and coats	4,196.5	4,196.5	3,998.2	3,812.7	3,653.7	3,522.7	3,484.5	3,423.4	3,357.8	3,274.9	3,182.0	3,072.9
77	2321	Men's and boys' shirts	12,288.3	12,721.9	13,198.5	13,692.6	14,207.1	14,706.9	15,171.0	15,609.9	16,024.8	16,474.0	16,884.1	17,247.9
78	2322	Men's and boys' underwear and nightwear	1,748.1	1,748.1	1,641.2	1,459.2	1,269.2	1,090.5	932.9	782.4	647.6	516.9	391.7	281.7
79	2323	Men's and boys' neckwear	1,255.9	1,341.0	1,428.9	1,516.3	1,609.0	1,698.9	1,788.1	1,872.0	1,950.1	2,023.6	2,089.9	2,151.7
80	2325	Mens' and boys' trousers and slacks	18,178.4	18,828.4	19,487.3	20,154.9	20,838.3	21,468.4	22,061.5	22,572.8	23,046.7	23,492.7	23,748.1	23,986.9
81	2326	Mens' and boys' work clothing	3,337.6	3,406.2	3,469.8	3,528.8	3,585.9	3,640.9	3,684.0	3,713.8	3,663.0	3,596.4	3,516.7	3,425.5
82	2329	Men's and boys' clothing, n.e.c.	4,588.9	4,781.6	4,988.5	5,217.1	5,438.0	5,651.4	5,857.3	6,045.5	6,212.7	6,357.7	6,486.2	6,595.8
83	2331	Women's and juniors' blouses and shirts	4,237.0	4,755.6	5,055.7	5,194.9	5,246.1	5,200.5	5,105.4	5,008.0	4,874.7	4,788.6	4,723.8	4,650.0
84	2335	Women's and juniors' dresses	13,182.1	15,553.5	17,124.3	18,022.3	17,697.5	17,127.4	16,643.9	16,174.4	15,699.9	15,228.7	15,628.7	15,363.0
85	2337	Women's and juniors' suits and coats	6,614.1	6,941.3	7,088.3	7,148.0	7,119.9	7,000.4	6,732.6	6,469.3	6,209.9	6,037.9	5,871.4	5,711.3
86	2339	Women's and juniors' outerwear, n.e.c.	14,490.6	16,829.8	18,697.9	20,218.0	21,514.0	22,703.5	24,045.6	25,448.9	26,918.5	28,678.9	30,557.4	32,562.3
87	2341	Women's and children's underwear	3,021.3	3,021.3	2,956.0	2,910.8	2,928.9	2,945.0	2,957.2	2,967.2	2,960.5	2,917.6	2,853.8	2,788.0
88	2342	Brassieres, girdles, and allied garments	2,471.3	2,600.7	2,785.7	3,020.8	3,297.8	3,626.3	3,963.4	4,292.7	4,618.9	4,945.9	5,275.8	5,588.0
89	2353	Hats, caps, and millinery	1,636.6	1,848.7	2,020.8	2,154.2	2,258.7	2,334.2	2,393.8	2,456.6	2,527.3	2,596.3	2,663.2	2,761.8
90	2361	Girls' and children's dresses and blouses	2,502.6	2,502.6	2,507.9	2,522.0	2,542.1	2,570.9	2,607.6	2,649.7	2,700.9	2,732.7	2,733.9	2,713.1

Table 4.3. (contd)

Sector Num.	SIC	Sector Title	1994:4	1995:4	1996:4	1997:4	1998:4	1999:4	2000:4	2001:4	2002:4	2003:4	2004:4	2005:4
91	2369	Girls' and children's outerwear, n.e.c.	3,914.6	3,914.6	3,836.3	3,823.8	3,876.4	3,969.6	4,089.2	4,213.7	4,308.8	4,323.2	4,253.6	4,157.3
92	2371	Fur goods	142.4	142.4	124.7	107.6	92.0	78.3	67.7	60.7	55.6	51.5	47.9	44.5
93	2381	Fabrics dress and work gloves	928.6	1,031.1	1,142.6	1,261.7	1,387.3	1,515.4	1,645.0	1,785.2	1,945.2	2,095.8	2,249.2	2,405.3
94	2384	Robes and dressing gowns	610.5	810.5	761.7	714.8	672.5	638.4	610.4	579.7	551.1	523.5	499.2	475.4
95	2385	Waterproof outerwear	272.5	272.5	252.9	235.6	221.7	210.4	198.9	187.7	177.5	169.3	161.4	153.8
96	2386	Leather and sheep lined clothing	373.1	393.8	457.0	442.5	470.4	501.1	527.9	553.0	574.2	593.2	609.9	624.9
97	2387	Apparel belts	1,440.1	1,472.6	1,504.0	1,534.2	1,564.2	1,590.7	1,613.8	1,633.9	1,622.3	1,601.5	1,571.1	1,534.8
98	2389	Apparel and accessories, n.e.c.	1,211.2	1,340.0	1,477.6	1,621.7	1,770.8	1,924.7	2,084.2	2,249.0	2,415.0	2,576.7	2,735.7	2,894.4
99	2391	Curtains and draperies	1,968.2	1,968.2	1,868.6	1,768.1	1,668.5	1,579.0	1,500.3	1,347.2	1,391.1	1,347.2	1,303.8	1,260.4
100	2392	House furnishings, n.e.c.	11,833.2	12,125.4	12,521.0	13,009.9	13,578.0	14,201.5	14,848.3	15,487.2	16,119.6	16,717.1	17,279.0	17,803.4
101	2393	Textile bags	2,091.6	2,156.8	2,265.8	2,414.6	2,593.6	2,803.2	3,012.3	3,194.7	3,338.7	3,473.1	3,577.2	3,674.2
102	2394	Canvas and related products	2,524.3	2,524.3	2,483.4	2,444.1	2,408.4	2,384.3	2,367.9	2,347.7	2,312.8	2,282.8	2,250.5	2,219.6
103	2395	Pleating and stitching	1,348.7	1,348.7	1,316.1	1,287.1	1,264.3	1,244.1	1,223.3	1,204.8	1,188.4	1,171.3	1,153.2	1,134.5
104	2396	Automotive and apparel trimmings	12,571.2	13,151.6	13,914.6	14,843.0	15,833.3	16,979.0	18,109.8	19,232.4	20,225.4	21,173.6	22,107.1	23,021.1
105	2397	Schiffli machine embroideries	408.6	408.6	405.4	405.5	408.9	411.8	416.1	420.5	423.4	424.2	421.0	421.0
106	2399	Fabricated textile products, n.e.c.	8,045.2	8,455.7	8,968.1	9,548.4	10,153.6	10,736.2	11,340.3	11,913.8	12,445.8	12,887.7	13,242.6	13,568.3
107	2411	Logging	19,442.9	22,640.1	25,290.9	26,686.6	27,054.4	27,334.8	27,334.8	27,334.8	27,334.8	27,334.8	27,474.9	28,200.3
108	2421	Sawmills and planing mills, general	48,781.8	48,781.8	48,793.6	49,176.8	49,969.8	51,138.6	52,620.2	54,324.4	56,019.0	57,718.6	59,090.5	60,219.6
109	2426	Handwood dimension and flooring mills	4,941.5	5,022.4	5,175.7	5,417.1	5,745.9	6,135.4	6,582.7	7,059.7	7,525.0	7,975.1	8,415.6	8,842.4
110	2429	Special product sawmills, n.e.c.	267.5	267.5	267.5	267.5	267.5	267.5	267.5	267.5	267.5	267.5	267.5	267.5
111	2431	Millwork	20,773.5	20,773.5	20,773.5	20,611.6	20,607.7	20,695.3	20,895.4	21,187.4	21,447.7	21,643.3	21,775.8	21,894.6
112	2434	Wood kitchen cabinets	12,105.8	12,110.1	12,192.3	12,407.3	12,759.4	13,188.8	13,690.7	14,236.2	14,727.0	15,204.5	15,672.7	16,148.8
113	2435	Hardwood veneer and plywood	3,738.4	3,738.4	3,741.9	3,780.4	3,886.8	4,023.8	4,211.7	4,424.7	4,636.6	4,859.1	5,092.5	5,320.8
114	2436	Softwood veneer and plywood	5,980.7	5,980.7	5,980.7	5,483.5	5,444.3	5,453.5	5,512.5	5,614.9	5,726.4	5,836.5	5,915.7	5,975.1
115	2439	Structural wood members, n.e.c.	5,917.1	5,917.1	5,917.1	5,917.1	5,917.1	5,968.7	6,135.9	6,353.9	6,604.1	6,868.4	7,109.0	7,329.4
116	2441	Nailed wood boxes and skook	970.4	982.7	992.4	1,000.5	1,007.5	1,018.9	1,035.5	1,061.3	1,097.4	1,140.4	1,176.2	1,210.5
117	2448	Wood pallets and skids	3,792.7	3,840.8	3,873.1	3,904.6	3,939.0	4,002.0	4,098.2	4,238.0	4,428.9	4,654.5	4,859.5	5,062.8
118	2449	Wood containers, n.e.c.	676.6	689.1	691.9	691.9	691.9	691.9	691.9	691.9	708.7	725.4	744.5	762.6
119	2451	Mobile homes	15,624.7	14,959.1	14,067.6	12,848.4	12,848.4	12,848.4	11,691.1	11,691.1	11,188.0	11,188.0	11,188.0	11,290.5
120	2452	Prefabricated wood buildings	5,150.7	5,150.7	5,150.7	5,023.8	5,023.8	5,023.8	5,023.8	5,023.8	5,023.8	5,023.8	5,023.8	5,023.8
121	2491	Wood preserving	4,925.2	5,016.6	5,029.6	5,029.6	5,029.6	5,029.6	5,029.6	5,029.6	5,114.3	5,215.2	5,336.5	5,456.8
122	2493	Reconstituted wood products	5,347.5	5,651.3	6,024.9	6,469.8	6,971.8	7,509.9	8,088.6	8,670.2	9,226.3	9,806.3	10,405.2	11,021.7
123	2499	Wood products, n.e.c.	6,187.2	6,187.2	6,187.2	6,174.7	6,168.7	6,168.7	6,133.6	6,117.7	6,100.7	6,062.7	6,026.5	5,981.3
124	2511	Wood household furniture	15,322.8	15,528.8	15,759.8	16,021.1	16,283.5	16,577.9	16,891.8	17,166.6	17,372.3	17,533.0	17,653.8	17,747.7
125	2512	Upholstered household furniture	13,959.1	14,640.1	15,401.8	16,239.8	17,119.2	18,027.7	18,987.3	19,935.7	20,855.2	21,748.4	22,620.4	23,500.2
126	2514	Metal household furniture	3,763.7	3,763.7	3,556.9	3,548.5	3,542.2	3,541.7	3,550.1	3,381.5	3,165.9	2,964.7	2,759.9	2,579.9
127	2515	Mattresses and bedsprings	6,894.5	7,162.4	7,453.4	7,765.5	8,082.9	8,398.5	8,746.5	9,094.1	9,438.0	9,765.3	10,078.0	10,386.5
128	2517	Wood television and radio cabinets	988.8	1,031.4	1,068.9	1,111.6	1,157.9	1,206.7	1,253.0	1,288.6	1,310.9	1,327.5	1,338.8	1,342.4
129	2519	Household furniture, n.e.c.	642.9	653.4	664.3	675.9	687.2	698.6	713.6	728.1	742.7	755.8	769.9	783.2
130	2521	Wood office furniture	6,949.0	7,188.4	7,445.2	7,725.1	7,959.1	8,119.1	8,226.6	8,119.1	8,335.7	8,548.4	8,747.9	8,944.2
131	2522	Office furniture, except wood	12,917.8	13,157.5	13,497.4	13,892.2	14,370.3	15,004.2	15,711.3	16,447.4	17,185.1	17,941.4	18,716.7	19,512.5
132	2531	Public building and related furniture	8,249.6	11,930.8	15,506.5	18,874.7	20,951.7	20,666.9	20,666.9	20,666.9	20,666.9	21,222.6	21,689.4	22,442.4
133	2541	Wood partitions and fixtures	6,690.4	6,741.9	6,828.6	6,945.2	7,100.5	7,303.5	7,541.5	7,815.3	8,064.6	8,306.0	8,544.4	8,765.0
134	2542	Partitions and fixtures, except wood	5,473.9	5,622.5	5,823.0	6,067.7	6,361.3	6,709.7	7,089.9	7,492.9	7,896.5	8,310.0	8,734.5	9,154.9
135	2591	Drapery hardware and blinds and shades	5,344.0	5,588.3	5,866.9	6,096.1	6,327.6	6,569.2	6,778.5	6,970.7	7,128.5	7,279.9	7,421.0	7,572.9

Table 4.3. (contd)

Sector Num.	SIC	Sector Title	Fourth Quarter Emergency Capacity (millions of 1992\$)											
			1994:4	1995:4	1996:4	1997:4	1998:4	1999:4	2000:4	2001:4	2002:4	2003:4	2004:4	2005:4
136	2599	Furniture and fixtures, n.e.c.	4,430.2	4,592.8	4,782.7	4,957.8	5,146.0	5,358.8	5,569.8	5,763.8	5,954.5	6,148.9	6,343.3	6,550.7
137	2611	Pulp mills	4,551.7	4,628.1	4,724.9	4,847.1	4,981.8	5,121.8	5,269.1	5,438.8	5,607.2	5,770.3	5,932.4	6,090.2
138	2621	Paper mills	37,038.6	37,569.1	38,102.5	38,692.2	39,352.7	40,022.7	40,737.5	41,640.8	42,803.4	43,416.9	44,231.7	44,960.6
139	2631	Paperboard mills	18,296.5	18,490.8	18,706.8	18,911.6	19,132.7	19,517.0	19,996.8	20,408.3	20,876.7	21,334.1	21,782.4	22,244.5
140	2652	Set-up paperboard boxes	1,095.8	1,078.3	1,066.9	1,068.4	1,078.3	1,081.0	1,088.7	1,061.9	1,054.6	1,049.6	1,045.8	1,043.8
141	2653	Corrugated and solid fiber boxes	31,348.3	32,517.1	33,785.3	34,993.7	36,124.1	37,287.0	38,347.4	39,458.9	40,521.0	41,644.0	42,787.4	43,974.4
142	2654	Fiber cans, drums, and similar product	4,347.3	4,347.3	4,389.2	4,383.7	4,399.6	4,418.0	4,431.3	4,448.4	4,458.5	4,473.9	4,489.5	4,508.9
143	2655	Sanitary food containers	3,643.0	3,596.2	3,596.2	3,572.5	3,573.8	3,578.7	3,565.4	3,565.4	3,547.0	3,542.8	3,543.3	
144	2657	Folding paperboard boxes	11,208.7	11,514.6	11,850.2	12,147.8	12,439.6	12,764.0	13,048.0	13,346.2	13,625.1	13,921.7	14,221.0	14,534.5
145	2671	Paper coated and laminated, packaging	5,515.5	5,810.7	6,135.9	6,465.6	6,801.5	7,156.0	7,501.3	7,854.1	8,203.6	8,564.3	8,935.8	9,322.6
146	2672	Paper coated and laminated, n.e.c.	14,009.8	14,526.7	15,080.7	15,557.3	16,027.0	16,506.4	16,933.8	17,344.2	17,718.6	18,086.0	18,450.5	18,830.2
147	2673	Bags: plastics, laminated, and coated	9,740.4	10,042.8	10,427.2	10,837.5	11,268.9	11,740.2	12,207.9	12,684.0	13,151.1	13,633.2	14,132.0	14,651.0
148	2674	Bags: uncoated paper and multivall	3,542.6	3,542.6	3,542.6	3,548.9	3,543.3	3,541.4	3,618.1	3,646.5	3,672.8	3,702.5	3,735.0	3,770.0
149	2675	Die cut paper and board	6,542.0	6,622.1	6,712.5	6,790.6	6,861.2	6,937.0	6,993.9	7,050.2	7,099.1	7,143.9	7,186.0	7,233.8
150	2676	Sanitary paper products	20,313.5	20,815.3	21,039.0	21,504.7	21,961.2	22,441.3	22,935.5	23,408.0	23,881.6	24,336.4	24,791.7	25,262.2
151	2677	Envelopes	3,752.2	3,804.1	3,885.4	3,975.9	4,073.9	4,186.5	4,296.9	4,409.5	4,519.0	4,632.3	4,748.7	4,869.3
152	2678	Stationary products	2,074.3	2,105.3	2,156.9	2,217.5	2,285.8	2,365.2	2,445.8	2,530.7	2,617.0	2,708.2	2,804.1	2,904.1
153	2679	Converted paper products, n.e.c.	6,617.5	6,887.8	7,194.2	7,538.4	7,928.4	8,363.4	8,844.8	9,370.2	9,941.4	10,558.7	11,223.9	11,948.9
154	2711	Newspapers	53,357.2	53,946.4	54,443.4	54,959.4	55,496.8	56,066.8	56,669.4	57,299.4	57,951.0	58,623.0	59,315.0	60,027.0
155	2721	Periodicals	41,583.5	42,097.8	42,640.1	43,199.9	44,172.8	45,131.6	46,058.4	46,972.9	47,910.6	48,955.6	50,160.8	51,317.6
156	2731	Book publishing	24,920.9	25,277.5	25,670.0	26,103.4	26,579.2	27,097.3	27,658.8	28,046.5	28,505.1	28,838.4	29,149.4	29,426.4
157	2732	Book printing	5,763.7	5,905.7	6,030.3	6,137.9	6,227.3	6,313.3	6,398.8	6,494.7	6,590.7	6,697.2	6,816.9	6,929.9
158	2741	Miscellaneous publishing, lithographic	23,261.4	23,774.5	24,263.3	24,704.1	25,095.5	25,498.4	25,906.4	26,360.1	26,816.9	27,317.3	27,867.5	28,404.6
159	2752	Commercial printing, lithographic	66,844.5	67,768.8	69,084.7	70,343.6	71,713.2	73,344.7	74,885.0	76,562.0	78,196.9	79,931.3	81,725.8	83,565.4
160	2754	Commercial printing, gravure	4,628.8	4,796.2	5,001.1	5,216.1	5,449.6	5,709.6	5,970.4	6,243.4	6,515.2	6,794.9	7,082.0	7,379.3
161	2759	Commercial printing, n.e.c.	20,195.3	20,482.3	20,886.6	21,299.7	21,754.4	22,259.8	22,750.8	23,247.3	23,714.8	24,164.2	24,604.8	25,052.8
162	2761	Manifold business forms	9,684.6	9,684.6	9,684.6	9,691.6	9,711.2	9,736.2	9,771.4	9,843.2	9,959.2	10,006.7	10,003.6	9,989.0
163	2771	Greeting cards	6,521.4	6,521.4	6,522.9	6,539.7	6,584.7	6,653.9	6,746.0	6,860.8	7,059.3	7,200.8	7,311.5	7,410.8
164	2782	Blankbooks and looseleaf binders	7,122.6	7,123.0	7,140.2	7,193.7	7,293.9	7,449.5	7,635.1	7,841.2	8,040.8	8,263.6	8,484.4	8,698.0
165	2789	Bookbinding and related work	2,224.2	2,227.7	2,232.1	2,242.5	2,261.3	2,289.9	2,327.3	2,382.0	2,447.5	2,516.0	2,576.4	2,634.1
166	2791	Typesetting	2,945.4	2,844.5	2,749.6	2,655.6	2,569.2	2,500.1	2,436.8	2,392.1	2,358.9	2,331.3	2,310.2	2,310.2
167	2796	Platemaking services	5,228.8	5,480.9	5,788.7	6,127.8	6,504.6	6,922.8	7,388.4	7,881.0	8,394.5	8,957.4	9,563.5	10,206.3
168	2812	Alkalies and chlorine	2,123.7	2,176.9	2,183.9	2,183.9	2,183.9	2,183.9	2,183.9	2,183.9	2,183.9	2,188.2	2,243.5	2,295.9
169	2813	Industrial gases	5,457.7	5,489.6	5,489.6	5,489.6	5,489.6	5,489.6	5,489.6	5,510.7	5,568.5	5,642.1	5,758.1	5,894.9
170	2816	Inorganic pigments	4,450.1	4,544.0	4,625.7	4,698.0	4,770.5	4,869.2	4,996.5	5,150.1	5,305.8	5,491.7	5,703.0	5,939.1
171	2819	Industrial inorganic chemicals, n.e.c.	28,583.4	29,043.6	29,204.9	29,204.9	29,204.9	29,204.9	29,204.9	29,204.9	29,432.6	30,027.6	30,898.8	31,862.9
172	2821	Plastics materials and resins	44,063.9	44,063.9	44,063.9	44,063.9	44,063.9	45,188.0	47,236.8	49,501.4	51,814.5	54,134.2	56,474.7	58,897.9
173	2822	Synthetic rubber	5,210.0	5,210.0	5,210.0	5,290.1	5,521.9	5,893.6	6,183.3	6,478.0	6,860.6	7,248.2	7,632.5	8,019.6
174	2823	Cellulosic manmade fibers	1,912.6	1,912.6	1,912.6	1,912.6	1,912.6	1,912.6	1,912.6	1,912.6	1,912.6	1,912.6	1,912.6	1,912.6
175	2824	Organic fibers, noncellulosic	13,508.9	13,508.9	13,508.9	13,508.9	13,508.9	13,508.9	13,508.9	13,508.9	13,508.9	13,508.9	13,508.9	13,508.9
176	2833	Medicinals and botanicals	6,865.5	6,865.5	6,865.5	6,865.5	6,865.5	6,865.5	6,865.5	6,865.5	6,865.5	6,865.5	6,865.5	6,865.5
177	2834	Pharmaceutical preparations	99,005.2	98,498.4	99,573.1	100,714.9	101,977.7	103,488.8	104,707.0	105,579.7	106,638.0	107,119.4	107,539.6	107,906.3
178	2835	Diagnosic substances	13,918.7	15,789.4	18,215.4	20,913.9	23,914.6	27,209.9	30,537.4	33,788.9	36,946.1	40,042.4	43,051.1	45,935.4
179	2836	Biological products, except diagnostic	6,609.6	7,606.1	8,932.8	10,496.2	12,370.7	14,661.9	17,335.2	20,421.5	23,986.3	28,178.5	33,088.8	38,810.5
180	2841	Soap and other detergents	27,041.4	27,041.4	29,260.0	31,750.6	32,082.5	32,546.6	33,359.5	34,135.4	34,841.1	35,534.3	36,224.5	36,915.4

Table 4.3. (contd)

Sector	SIC	1994-4	1995-4	1998-4	1997-4	1998-4	1998-4	1999-4	2000-4	2001-4	2002-4	2003-4	2004-4	2005-4
181	2842	19,573.8	20,797.3	22,316.2	23,805.5	25,082.0	26,020.7	27,009.8	27,988.9	28,931.7	29,883.3	30,852.4	31,842.9	
182	2843	6,621.5	6,763.3	6,907.2	7,063.8	7,219.7	7,178.8	7,787.6	8,385.6	8,963.1	9,535.5	10,106.1	10,676.8	
183	2844	28,389.1	29,034.6	29,842.7	30,927.7	32,237.1	32,880.7	33,630.6	34,320.1	34,912.3	35,483.5	36,051.4	36,620.4	
184	2851	30,809.8	30,809.8	30,893.0	31,280.0	31,280.0	32,039.6	32,878.1	34,749.2	35,439.0	36,189.4	36,951.2	37,713.0	
185	2861	982.0	982.0	983.5	1,005.7	1,028.7	1,053.7	1,080.0	1,103.3	1,126.2	1,151.2	1,176.2	1,201.2	
186	2865	12,656.6	12,656.6	12,656.6	12,656.6	12,656.6	13,080.3	13,529.5	14,116.7	14,678.3	15,207.8	15,741.0	16,274.2	
187	2869	62,479.5	62,479.5	62,479.5	62,751.6	63,729.7	65,530.6	67,925.8	70,858.4	73,844.8	76,878.5	79,943.2	83,096.9	
188	2873	4,040.4	4,228.3	4,391.3	4,518.4	4,625.0	4,733.8	4,826.0	4,913.8	4,997.0	5,080.1	5,162.8	5,245.3	
189	2874	4,219.8	4,278.4	4,278.4	4,310.8	4,310.8	4,381.0	4,452.9	4,521.8	4,591.3	4,662.6	4,733.6	4,804.3	
190	2875	3,909.7	4,034.1	4,168.7	4,309.6	4,455.3	4,602.4	4,737.1	4,871.9	4,990.5	5,110.2	5,236.7	5,365.2	
191	2879	11,723.0	11,988.5	12,190.4	12,323.2	12,377.6	12,405.3	12,456.3	12,484.9	12,533.1	12,605.8	12,674.5	12,745.5	
192	2891	8,601.3	8,601.3	8,634.0	8,773.8	8,912.9	9,128.7	9,442.2	9,743.8	10,041.6	10,348.6	10,650.8	10,947.5	
193	2892	1,217.5	1,217.5	1,226.3	1,249.7	1,272.8	1,302.5	1,337.3	1,363.8	1,387.4	1,409.8	1,431.4	1,450.2	
194	2893	6,842.9	7,024.0	7,284.0	7,579.3	7,829.4	8,070.9	8,317.1	8,565.5	8,814.0	9,064.6	9,312.3	9,559.0	
195	2895	886.2	886.2	886.2	700.5	718.9	735.3	748.4	761.4	774.0	786.5	798.4	809.9	
196	2899	18,860.3	17,377.4	17,969.0	18,678.2	19,220.1	19,663.0	20,172.0	20,681.8	21,186.8	21,692.4	22,198.5	22,673.3	
197	2911	147,272.9	154,825.3	154,825.3	155,792.9	157,465.1	159,620.6	162,512.4	165,483.3	168,178.8	170,607.0	173,021.7	175,491.1	
198	2951	12,511.5	12,551.4	12,652.8	12,814.5	13,037.9	13,350.8	13,680.9	14,041.1	14,333.1	14,544.6	14,725.7	14,895.3	
199	2952	6,152.1	6,302.8	6,482.8	6,688.3	6,914.6	7,157.9	7,411.1	7,668.9	7,892.1	8,116.3	8,350.1	8,578.2	
200	2992	14,149.5	14,382.8	14,671.0	15,014.3	15,419.6	15,874.4	16,357.1	16,860.3	17,329.3	17,814.9	18,318.1	18,828.0	
201	2999	1,161.2	1,179.9	1,201.9	1,227.2	1,256.4	1,293.1	1,332.5	1,371.3	1,411.4	1,451.8	1,500.1	1,549.4	
202	3011	14,782.3	15,004.1	15,207.9	15,399.0	15,605.8	15,860.5	16,093.9	16,317.8	16,453.9	16,591.8	16,779.9	16,976.0	
203	3021	1,551.6	1,574.5	1,575.9	1,575.9	1,575.9	1,575.9	1,575.9	1,575.9	1,575.9	1,575.9	1,575.9	1,575.9	
204	3052	3,858.9	3,909.1	3,963.0	4,032.8	4,105.2	4,166.4	4,221.9	4,272.9	4,344.9	4,417.3	4,491.3	4,569.9	
205	3053	6,328.0	6,415.3	6,529.5	6,688.3	6,868.6	7,043.8	7,225.4	7,405.8	7,614.9	7,818.6	8,018.0	8,212.2	
206	3061	9,322.8	9,625.8	9,970.4	10,331.3	10,727.6	11,148.8	11,556.8	11,953.7	12,284.0	12,599.5	12,918.8	13,249.2	
207	3069	9,705.2	9,960.9	10,208.8	10,422.7	10,618.6	10,846.8	11,068.3	11,309.8	11,539.7	11,784.5	12,002.4	12,246.0	
208	3081	16,552.1	17,174.0	17,845.1	18,556.9	19,322.7	20,147.5	20,957.5	21,794.7	22,609.2	23,438.9	24,288.2	25,251.1	
209	3082	4,722.5	4,984.9	5,226.2	5,502.8	5,797.5	6,124.5	6,455.8	6,796.2	7,136.7	7,496.0	7,877.8	8,297.6	
210	3083	3,004.2	2,949.5	2,893.4	2,839.4	2,839.4	2,839.4	2,839.4	2,839.4	2,839.4	2,839.4	2,839.4	2,839.4	
211	3084	4,119.8	4,323.8	4,547.1	4,786.9	5,046.2	5,319.1	5,592.7	5,881.2	6,185.5	6,455.5	6,755.3	7,085.1	
212	3085	8,646.4	9,305.2	10,039.0	10,841.2	11,718.8	12,689.3	13,703.3	14,789.0	15,930.7	17,153.1	18,479.7	19,950.0	
213	3086	21,742.3	22,586.7	23,486.9	24,429.5	25,429.3	26,509.1	27,605.1	28,812.1	30,053.4	31,366.2	32,766.5	34,307.5	
214	3087	8,237.8	9,006.6	9,877.9	10,847.1	11,923.6	13,128.4	14,410.2	15,795.2	17,253.2	18,849.8	20,603.4	22,557.8	
215	3088	3,767.8	4,134.3	4,548.0	5,007.4	5,517.4	6,091.2	6,717.2	7,411.8	8,158.3	8,986.4	9,910.3	10,948.0	
216	3089	76,223.9	80,174.5	84,502.5	89,154.9	94,185.4	99,635.2	105,166.5	110,979.8	116,864.8	123,047.5	129,622.1	136,853.3	
217	3111	4,331.8	4,595.1	4,866.8	5,199.8	5,482.1	5,713.8	5,873.0	5,981.8	5,983.8	5,968.2	5,948.0	5,922.0	
218	3131	885.8	1,036.1	1,097.1	1,162.9	1,222.9	1,274.6	1,318.5	1,350.2	1,365.1	1,364.8	1,351.3	1,329.4	
219	3142	393.5	405.7	416.9	423.2	428.9	435.2	441.2	446.0	450.6	456.5	462.2	471.0	
220	3143	4,427.5	4,489.0	4,581.7	4,651.7	4,758.7	4,913.7	5,071.9	5,211.2	5,325.7	5,414.1	5,469.0	5,496.2	
221	3144	1,723.2	1,723.2	1,705.4	1,671.1	1,640.7	1,640.7	1,628.6	1,628.6	1,617.1	1,607.6	1,589.6	1,562.6	
222	3149	571.3	571.3	567.7	557.1	551.4	551.4	551.4	551.4	551.4	551.4	551.4	551.4	
223	3151	289.3	289.3	274.5	262.4	254.1	254.1	254.1	254.1	254.1	254.1	254.1	254.1	
224	3161	1,871.2	1,871.2	1,833.7	1,833.7	1,833.7	1,833.7	1,833.7	1,833.7	1,833.7	1,833.7	1,833.7	1,833.7	
225	3171	394.7	394.7	353.6	318.4	292.6	277.2	268.6	258.5	249.4	241.9	233.6	224.6	

Table 4.3. (contd)

Sector Num.	SIC	Sector Title	Fourth Quarter Emergency Capacity (millions of 1992\$)											
			1994:4	1995:4	1996:4	1997:4	1998:4	1999:4	2000:4	2001:4	2002:4	2003:4	2004:4	2005:4
226	3172	Personal leather goods, n.e.c.	502.8	508.0	520.3	534.9	538.2	548.1	558.3	564.1	570.2	578.1	582.0	581.6
227	3199	Leather goods, n.e.c.	872.1	872.1	872.1	813.4	813.4	813.4	764.3	749.7	713.5	679.0	648.5	616.6
228	3211	Flat glass	2,586.5	2,624.2	2,659.5	2,688.8	2,716.7	2,749.4	2,773.6	2,796.3	2,810.3	2,820.9	2,830.1	2,841.2
229	3221	Glass containers	5,004.6	5,188.9	5,392.9	5,587.9	5,798.0	5,996.0	6,194.0	6,388.5	6,570.2	6,749.7	6,920.5	7,090.7
230	3229	Pressed and blown glass, n.e.c.	5,477.3	5,686.1	5,908.2	6,130.1	6,365.0	6,619.4	6,888.5	7,115.7	7,347.2	7,572.6	7,791.2	8,011.8
231	3231	Products of purchased glass	10,559.2	11,032.0	11,555.3	12,105.1	12,699.3	13,335.8	13,980.9	14,638.7	15,299.3	15,966.3	16,528.0	17,170.3
232	3241	Cement, hydraulic	4,790.8	4,968.9	5,168.1	5,380.0	5,591.8	5,797.2	5,984.9	6,147.1	6,298.1	6,435.4	6,500.7	6,500.7
233	3251	Brick and structural clay tile	1,510.9	1,503.6	1,503.6	1,501.7	1,502.6	1,512.3	1,524.4	1,543.2	1,553.8	1,557.8	1,557.8	1,557.8
234	3253	Ceramic wall and floor tile	927.7	936.2	948.7	955.9	962.1	970.4	979.2	980.2	988.4	1,001.9	1,004.3	1,006.2
235	3255	Clay refractories	1,357.5	1,361.4	1,369.1	1,369.1	1,372.7	1,381.2	1,394.3	1,410.3	1,425.0	1,439.6	1,439.6	1,439.6
236	3259	Structural clay products, n.e.c.	281.9	274.7	267.7	260.6	252.6	243.3	246.7	243.8	240.0	234.7	229.7	229.7
237	3261	Vitreous plumbing fixtures	1,308.9	1,355.7	1,425.1	1,497.8	1,542.4	1,576.6	1,609.1	1,638.6	1,667.3	1,694.3	1,718.7	1,740.7
238	3262	Vitreous china table and kitchenware	548.0	548.0	577.6	585.0	602.3	617.1	634.0	650.0	665.8	681.1	695.5	709.1
239	3263	Semivitreous table and kitchenware	102.2	102.1	103.7	105.2	105.5	110.0	113.6	118.1	123.4	124.1	125.1	126.4
240	3264	Porcelain electrical supplies	1,661.8	1,779.3	1,934.7	2,115.6	2,293.2	2,454.8	2,572.4	2,689.9	2,810.4	2,932.0	3,053.7	3,175.4
241	3269	Pottery products, n.e.c.	1,102.8	1,120.1	1,145.3	1,168.4	1,190.2	1,212.3	1,237.9	1,261.1	1,283.9	1,305.2	1,324.6	1,342.2
242	3271	Concrete block and brick	3,397.9	3,397.9	3,397.9	3,397.9	3,400.1	3,430.2	3,489.4	3,575.0	3,689.3	3,752.4	3,820.5	3,884.5
243	3272	Concrete products, n.e.c.	9,932.8	9,962.8	9,995.5	10,088.3	10,188.5	10,368.8	10,672.6	11,076.1	11,504.9	11,920.0	12,329.8	12,734.9
244	3273	Ready-mixed concrete	32,829.7	32,829.7	32,829.7	32,829.7	32,829.7	32,829.7	32,829.7	32,829.7	32,829.7	32,829.7	32,829.7	32,829.7
245	3274	Lime	1,449.1	1,449.1	1,449.1	1,449.1	1,449.1	1,449.1	1,449.1	1,449.1	1,449.1	1,449.1	1,449.1	1,449.1
246	3275	Gypsum products	2,242.4	2,242.4	2,242.4	2,242.4	2,242.4	2,242.4	2,242.4	2,242.4	2,242.4	2,242.4	2,242.4	2,242.4
247	3281	Cut stone and stone products	1,799.5	1,828.3	1,828.3	1,828.3	1,828.3	1,828.3	1,828.3	1,828.3	1,828.3	1,828.3	1,828.3	1,828.3
248	3291	Abrasive products	5,484.7	5,484.7	5,484.7	5,484.7	5,484.7	5,484.7	5,484.7	5,484.7	5,484.7	5,484.7	5,484.7	5,484.7
249	3292	Asbestos products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250	3295	Minerals, ground or treated	2,632.9	2,720.2	2,834.5	2,967.3	3,121.3	3,309.5	3,509.5	3,725.4	3,947.7	4,187.9	4,444.6	4,713.1
251	3296	Mineral wool	5,146.4	5,252.4	5,398.4	5,568.4	5,768.8	6,022.1	6,300.5	6,595.0	6,872.9	7,159.6	7,444.8	7,739.6
252	3297	Nonclay refractories	2,379.7	2,443.1	2,525.5	2,619.3	2,727.0	2,863.4	3,016.6	3,184.1	3,351.2	3,529.6	3,722.0	3,923.5
253	3299	Nonmetallic mineral products, n.e.c.	1,437.1	1,500.2	1,580.6	1,673.0	1,779.1	1,904.3	2,041.6	2,191.5	2,341.9	2,499.8	2,668.6	2,847.3
254	3312	Blast furnaces and steel mills	51,382.6	52,157.6	52,803.0	53,244.2	53,437.4	53,773.3	55,014.0	56,287.6	57,289.6	58,067.3	58,067.3	58,067.3
255	3313	Electrometallurgical products	1,722.0	1,762.0	1,788.1	1,828.7	1,852.5	1,886.9	1,909.8	1,927.8	1,942.4	1,965.3	1,990.5	2,020.9
256	3315	Steel wire and related products	5,827.8	6,001.0	6,166.5	6,314.0	6,435.8	6,569.3	6,707.8	6,847.3	6,984.9	7,065.4	7,176.3	7,304.6
257	3316	Cold finishing of steel shapes	7,443.9	7,507.2	7,549.5	7,565.1	7,553.3	7,670.1	7,794.8	7,914.0	8,000.8	8,052.5	8,111.0	8,188.2
258	3317	Steel pipe and tubes	8,293.3	8,555.9	8,826.9	9,092.7	9,342.7	9,611.5	9,862.1	10,101.5	10,324.3	10,539.8	10,752.6	10,991.9
259	3321	Gray and ductile iron foundries	13,429.8	13,902.1	14,400.2	14,907.0	15,449.3	16,090.7	16,756.2	17,459.8	18,115.9	18,747.1	19,366.4	20,012.2
260	3322	Malleable iron foundries	333.4	371.1	406.6	439.9	431.1	431.1	431.1	431.1	431.1	431.1	431.1	431.1
261	3324	Steel investment foundries	2,435.4	2,714.3	2,990.9	3,268.6	3,552.1	3,853.1	3,853.1	3,853.1	3,853.1	3,853.1	3,853.1	3,853.1
262	3325	Steel foundries, n.e.c.	3,703.6	4,289.4	4,408.0	4,514.0	4,625.1	4,759.8	4,912.1	5,086.5	5,263.6	5,434.3	5,602.0	5,776.2
263	3331	Primary copper	7,632.8	8,286.8	8,994.6	9,685.7	10,390.1	11,115.8	11,829.0	12,540.3	13,219.8	13,940.1	14,733.3	15,585.8
264	3334	Primary aluminum	5,530.2	6,044.9	6,604.4	7,184.0	7,750.6	8,283.2	8,739.5	9,088.8	9,340.0	9,538.1	9,732.8	9,891.8
265	3339	Primary nonferrous metals, n.e.c.	3,931.8	4,298.4	4,688.9	5,040.9	5,393.4	5,713.6	5,992.3	6,212.4	6,370.3	6,500.3	6,623.7	6,724.1
266	3341	Secondary nonferrous metals	7,832.4	8,171.7	8,467.8	8,686.6	8,788.0	8,870.7	8,910.5	8,900.7	8,826.6	8,725.4	8,591.0	8,455.3
267	3351	Copper rolling and drawing	8,301.3	8,570.7	8,757.8	8,935.0	9,211.4	9,433.2	9,616.8	9,802.0	9,957.7	10,099.0	10,235.7	10,379.0
268	3353	Aluminum sheet, plate, and foil	11,736.4	12,000.2	12,282.9	12,591.7	12,944.7	12,944.7	12,944.7	12,944.7	12,944.7	12,944.7	12,944.7	12,944.7
269	3354	Aluminum extruded products	5,659.7	5,877.2	5,911.2	5,971.1	6,096.0	6,258.7	6,416.3	6,497.8	6,534.2	6,571.3	6,616.2	6,667.5
270	3355	Aluminum rolling and drawing, n.e.c.	694.1	747.5	799.9	845.5	888.9	927.5	927.5	927.5	927.5	927.5	927.5	927.5

Table 4.3. (contd)

Sector Num.	Sector Title	Fourth Quarter Emergency Capacity (millions of 1992\$)											
		1994:4	1995:4	1996:4	1997:4	1998:4	1999:4	2000:4	2001:4	2002:4	2003:4	2004:4	2005:4
3356	Nonferrous rolling and drawing, n.e.c.	4,108.0	4,200.5	4,200.5	4,239.4	4,327.4	4,462.7	4,608.9	4,724.1	4,829.4	4,919.8	5,001.6	5,080.2
3357	Nonferrous wiredrawing and insulating	23,495.8	24,003.3	25,017.9	26,425.0	28,119.9	29,916.4	31,605.9	33,270.1	34,989.2	36,448.8	37,988.7	39,539.3
3363	Aluminum die castings	4,840.5	4,806.8	4,987.4	5,105.4	5,227.2	5,352.9	5,481.7	5,552.7	5,610.1	5,639.8	5,647.8	5,659.3
3364	Nonferrous die castings, except aluminum	1,989.0	2,119.9	2,245.2	2,370.2	2,497.0	2,623.0	2,748.5	2,874.0	2,999.5	3,125.0	3,250.5	3,376.0
3385	Aluminum foundries	4,087.9	4,186.5	4,278.5	4,351.0	4,411.4	4,485.3	4,544.5	4,609.6	4,682.2	4,755.4	4,828.6	4,901.8
3366	Copper foundries	1,218.0	1,255.1	1,294.0	1,330.9	1,370.0	1,419.0	1,468.2	1,516.6	1,565.3	1,614.1	1,662.9	1,711.7
3369	Nonferrous forges, n.e.c.	657.1	716.9	731.1	748.6	765.5	786.8	810.5	839.2	871.0	904.5	937.6	971.6
3398	Metal heat treating	2,993.6	3,137.8	3,302.4	3,481.5	3,665.3	3,881.7	4,134.7	4,414.2	4,697.8	4,975.7	5,229.0	5,481.7
3399	Primary metal products, n.e.c.	3,215.9	3,307.2	3,435.8	3,600.5	3,795.9	4,026.0	4,276.6	4,551.8	4,820.0	5,072.2	5,297.3	5,518.6
3411	Metal cans	14,874.2	15,312.5	15,924.9	16,703.0	17,481.4	18,309.3	19,188.0	19,983.0	20,788.8	21,603.7	22,428.6	23,263.5
3412	Metal barrels, drums, and pails	2,697.1	2,776.6	2,892.1	3,021.9	3,172.3	3,342.1	3,494.9	3,625.1	3,728.2	3,837.9	3,950.5	4,068.8
3421	Cutlery	2,115.7	2,200.2	2,288.2	2,408.6	2,521.4	2,648.7	2,781.3	2,920.5	3,057.2	3,190.3	3,323.1	3,458.5
3423	Hand and edge tools, n.e.c.	6,790.0	6,824.1	6,884.7	6,958.0	7,041.0	7,148.0	7,274.5	7,399.3	7,501.3	7,578.8	7,636.6	7,691.0
3425	Hand saws and saw blades	1,418.5	1,482.1	1,510.0	1,560.4	1,611.2	1,665.7	1,730.0	1,802.7	1,872.8	1,938.7	2,011.1	2,085.0
3429	Hardware, n.e.c.	17,586.8	18,115.8	18,694.6	19,257.9	19,790.3	20,369.0	21,023.0	21,764.5	22,441.4	23,051.5	23,731.0	24,425.1
3431	Metal sanitary ware	987.7	910.1	878.7	871.9	875.3	871.4	847.4	824.6	800.8	780.1	762.0	742.9
3432	Plumbing fixture fittings and trims	5,614.3	5,694.5	5,754.7	5,872.1	5,945.0	6,002.7	6,020.7	6,041.1	6,048.3	6,070.0	6,104.6	6,126.4
3433	Heating equipment except electric	5,560.7	5,844.3	5,741.9	5,941.0	6,149.4	6,304.0	6,465.7	6,639.9	6,815.9	7,004.3	7,193.4	7,366.8
3441	Fabricated structural metal	18,796.3	19,100.7	19,222.1	19,417.4	19,702.1	20,111.6	20,643.7	21,348.4	22,157.6	22,976.2	23,782.7	24,599.9
3442	Metal doors, sash, and trim	12,292.7	12,406.9	12,418.8	12,498.7	12,659.9	12,919.1	13,279.7	13,710.4	14,139.8	14,568.1	14,975.0	15,368.4
3443	Fabricated plate work (boiler shops)	15,885.9	16,052.1	16,114.8	16,292.8	16,822.6	17,116.7	17,279.5	18,570.6	19,396.4	20,249.1	21,099.6	21,949.9
3444	Sheet metal work	25,304.9	25,767.0	26,463.0	27,379.5	28,528.9	29,939.4	31,485.1	33,121.8	34,739.0	36,371.3	37,992.7	39,638.0
3446	Architectural metal work	4,726.2	4,772.8	4,830.5	4,840.2	4,870.2	4,909.2	4,979.8	5,084.3	5,206.2	5,331.3	5,445.5	5,555.9
3448	Prefabricated metal buildings	6,824.6	6,824.6	6,846.8	6,916.0	7,039.2	7,230.8	7,462.4	7,707.5	7,924.8	8,090.2	8,225.3	8,355.2
3449	Miscellaneous metal work	6,933.6	6,796.8	6,927.6	7,078.8	7,254.1	7,457.3	7,756.2	8,074.4	8,420.0	8,719.9	9,020.7	9,320.2
3451	Screw machine products	9,137.4	10,174.4	10,745.7	10,802.3	11,243.2	12,139.7	12,957.4	13,890.3	14,896.5	15,563.7	16,561.4	17,799.9
3452	Bolts, nuts, rivets, and washers	8,724.5	10,463.5	11,746.1	11,509.0	11,509.0	11,509.0	11,492.0	11,555.3	11,446.6	11,446.6	11,446.6	11,597.5
3462	Iron and steel forgings	5,511.9	5,993.9	6,008.4	6,030.1	6,074.5	6,160.9	6,270.6	6,408.8	6,551.8	6,684.6	6,804.4	6,924.4
3463	Nonferrous forgings	2,025.2	2,071.0	2,126.7	2,196.3	2,285.1	2,387.0	2,503.1	2,630.3	2,750.4	2,877.5	3,015.8	3,160.1
3465	Automotive stampings	26,636.2	26,967.0	27,423.2	27,869.1	28,431.6	29,150.1	29,863.0	30,661.9	31,245.2	31,858.4	32,582.0	33,371.8
3466	Crowns and closures	1,214.4	1,223.4	1,228.2	1,227.9	1,339.7	1,443.2	1,539.4	1,624.6	1,684.4	1,730.5	1,772.2	1,811.4
3469	Metal stampings, n.e.c.	19,744.2	20,103.1	20,570.1	21,121.9	21,763.6	22,489.2	23,306.5	24,146.8	24,828.3	25,478.3	26,162.5	26,843.4
3471	Plating and polishing	8,780.4	8,963.8	9,211.8	9,499.3	9,851.1	10,298.0	10,799.3	11,344.0	11,872.3	12,408.4	12,975.7	13,546.3
3479	Metal coating and allied services	12,552.3	13,589.9	14,846.3	16,261.5	17,875.6	19,781.7	21,875.8	24,147.8	26,499.5	28,946.5	31,479.8	34,177.8
3482	Small arms ammunition	2,310.1	2,479.6	2,637.7	2,791.8	2,928.4	3,047.1	3,148.1	3,225.6	3,286.3	3,349.1	3,414.3	3,484.1
3483	Ammunition, except for small arms, n.e.c.	3,321.6	3,557.6	3,764.3	3,957.3	4,120.0	4,259.6	4,380.6	4,469.2	4,545.8	4,631.7	4,723.4	4,821.0
3484	Small arms	1,912.0	2,054.6	2,191.6	2,328.0	2,449.4	2,559.0	2,653.1	2,726.3	2,784.0	2,841.0	2,897.6	2,956.2
3489	Ordnance and accessories, n.e.c.	2,697.8	2,873.1	3,038.0	3,196.7	3,339.0	3,479.0	3,606.7	3,719.6	3,826.9	3,950.6	4,083.2	4,227.7
3491	Industrial valves	10,908.2	11,418.3	12,031.5	12,750.1	13,565.2	14,464.0	15,391.1	16,396.3	17,431.9	18,489.2	19,583.5	20,721.1
3493	Fluid power valves and hose fittings	8,027.2	8,398.0	8,845.9	9,399.5	10,031.6	10,760.3	11,514.1	12,241.8	12,988.6	13,557.1	14,228.8	14,924.3
311	Steel power valves and hose fittings	842.9	877.5	921.7	973.9	1,031.7	1,099.8	1,167.8	1,233.1	1,290.6	1,349.6	1,407.9	1,469.8
310	Steel springs, except wire	2,638.0	2,545.1	2,455.9	2,345.3	2,213.3	2,069.8	1,916.8	1,751.1	1,574.1	1,396.6	1,218.5	1,040.4
312	Valves and pipe fittings, n.e.c.	2,928.4	2,993.0	3,060.5	3,129.5	3,193.2	3,261.3	3,323.8	3,383.3	3,440.2	3,495.7	3,548.5	3,597.7
3495	Wire springs	6,625.2	6,764.6	7,169.5	7,504.2	7,813.3	8,095.0	8,321.6	8,527.2	8,730.7	8,930.9	9,126.6	9,328.1
3496	Miscellaneous fabricated wire products	5,265.6	5,468.0	5,709.4	5,991.1	6,264.6	6,525.8	6,753.3	6,970.8	7,193.8	7,417.6	7,640.9	7,867.6
3497	Metal foil and leaf												

Table 4.3. (contd)

Sector Num.	SIC	Sector Title	Fourth Quarter Emergency Capacity (millions of 1992\$)											
			1994/4	1995/4	1996/4	1997/4	1998/4	1999/4	2000/4	2001/4	2002/4	2003/4	2004/4	2005/4
316	3498	Fabricated pipe and fittings	5,463.9	5,860.4	6,312.8	6,832.8	7,391.7	8,017.0	8,662.9	9,367.9	10,123.8	10,900.0	11,703.5	12,542.2
317	3499	Fabricated metal products, n.e.c.	15,793.5	16,779.9	17,776.3	18,768.2	19,644.0	20,517.1	21,377.1	22,182.5	22,449.0	23,118.7	23,778.5	24,459.9
318	3511	Turbines and turbine generator sets	8,294.6	8,659.1	9,064.1	9,511.2	10,004.1	10,541.1	11,119.6	11,849.0	12,417.7	12,458.9	12,728.6	13,026.3
319	3519	Internal combustion engines, n.e.c.	19,579.3	20,983.8	22,429.0	23,860.5	25,084.8	26,130.1	26,801.8	27,288.0	27,634.2	27,816.4	28,019.4	28,234.2
320	3523	Farm machinery and equipment	17,905.6	19,281.1	20,512.9	21,712.5	22,737.0	23,845.4	24,933.3	25,038.7	25,485.4	25,836.8	26,139.8	26,412.3
321	3524	Lawn and garden equipment	11,675.9	12,763.7	13,814.7	14,781.4	15,705.4	16,587.0	17,354.0	18,028.6	19,078.2	19,521.6	19,918.8	
322	3531	Construction machinery	25,329.8	27,509.1	29,829.0	32,808.2	36,167.3	40,155.3	43,017.7	46,717.0	49,990.3	53,000.0	55,690.7	58,344.6
323	3532	Mining machinery	3,842.3	4,175.8	4,526.9	4,968.4	5,493.0	6,035.3	6,598.5	7,172.6	7,869.3	8,184.9	8,622.3	9,036.7
324	3533	Oil and gas field machinery	6,382.2	7,113.8	8,071.3	9,212.3	10,512.1	11,951.2	13,019.6	14,890.3	16,832.1	18,449.0	20,365.4	21,901.9
325	3534	Elevators and moving stairways	1,933.6	2,080.8	2,232.8	2,379.2	2,542.0	2,731.4	2,910.5	3,098.9	3,274.1	3,444.4	3,608.9	3,764.7
326	3535	Conveyors and conveying equipment	7,798.8	8,183.2	8,530.0	8,848.8	9,187.9	9,558.4	9,957.4	10,366.4	10,749.7	11,110.5	11,465.8	11,841.7
327	3536	Hoist, cranes, and monorails	1,368.1	1,436.5	1,499.0	1,557.1	1,619.2	1,689.8	1,768.4	1,852.9	1,937.1	2,020.0	2,103.1	2,191.5
328	3537	Industrial trucks and tractors	7,360.1	7,847.8	8,353.4	8,893.9	9,353.4	9,854.1	10,385.4	10,948.8	11,549.7	12,180.0	12,840.0	13,530.0
329	3541	Machine tools, metal cutting types	5,632.8	5,841.2	6,044.9	6,268.6	6,511.1	6,784.6	7,078.6	7,378.6	7,678.6	7,978.6	8,278.6	8,578.6
330	3542	Machine tools, metal forming types	3,290.4	3,385.1	3,484.1	3,542.1	3,647.4	3,794.6	3,972.8	4,154.2	4,328.8	4,498.8	4,664.9	4,841.1
331	3543	Industrial patterns	972.8	998.0	1,017.4	1,035.6	1,050.6	1,066.2	1,082.0	1,100.0	1,120.0	1,140.0	1,160.0	1,180.0
332	3544	Special dies, tools, jigs and fixtures	17,733.1	18,256.5	18,890.1	19,564.0	20,401.6	21,406.2	22,387.0	23,336.4	24,205.8	25,074.8	26,000.7	27,025.2
333	3545	Machine tool accessories	6,728.4	7,169.5	7,216.8	7,278.1	7,398.9	7,593.6	7,817.5	7,988.2	8,050.7	8,184.3	8,289.9	8,420.0
334	3546	Power driven handtools	5,833.7	6,233.6	6,302.3	6,418.8	6,623.0	6,922.9	7,255.4	7,579.2	7,841.4	8,088.2	8,343.2	8,604.1
335	3547	Rolling mill machinery	1,089.2	1,142.4	1,154.0	1,170.5	1,196.5	1,233.6	1,275.9	1,311.1	1,337.4	1,360.9	1,388.2	1,419.8
336	3548	Welding apparatus	4,359.6	4,651.2	4,704.4	4,776.6	4,907.5	5,104.4	5,329.5	5,579.8	5,887.4	6,244.6	6,644.1	7,024.8
337	3549	Metallurgical machinery, n.e.c.	4,292.4	4,592.7	4,683.6	4,767.9	4,943.2	5,201.3	5,505.0	5,796.5	6,052.9	6,298.0	6,560.7	6,820.7
338	3552	Textile machinery	3,906.7	4,149.3	4,179.3	4,209.8	4,253.4	4,328.2	4,450.7	4,618.3	4,805.4	4,975.7	5,125.0	5,274.8
339	3553	Woodworking machinery	2,784.9	2,962.0	2,989.8	3,016.2	3,046.7	3,095.5	3,179.0	3,299.0	3,438.0	3,589.2	3,690.6	3,819.8
340	3554	Paper industries machinery	3,618.3	3,838.4	4,050.3	4,055.2	4,059.9	4,082.2	4,141.2	4,238.7	4,355.9	4,468.8	4,552.8	4,657.1
341	3555	Printing trades machinery	5,341.9	5,666.1	5,696.8	5,732.9	5,794.3	5,909.8	6,105.6	6,382.4	6,708.8	7,036.1	7,357.9	7,702.5
342	3556	Food products machinery	4,464.9	4,745.5	4,788.3	4,832.6	4,894.9	4,963.9	5,087.3	5,256.2	5,446.8	5,619.5	5,771.3	5,927.1
343	3559	Special industry machinery, n.e.c.	26,888.8	28,596.1	28,916.5	29,270.9	29,664.4	30,210.7	31,043.4	32,156.0	33,382.9	34,463.6	35,370.3	36,264.0
344	3561	Pumps and pumping equipment	7,378.1	7,573.1	7,767.0	8,008.5	8,296.9	8,648.0	9,016.6	9,391.7	9,748.5	10,080.0	10,434.8	10,791.5
345	3562	Ball and roller bearings	5,588.1	5,679.7	5,778.0	5,871.5	6,087.0	6,294.9	6,538.5	6,800.6	7,072.8	7,349.3	7,634.0	7,921.4
346	3563	Air and gas compressors	5,804.4	6,022.2	6,227.4	6,454.3	6,704.9	6,984.7	7,313.9	7,651.5	7,983.0	8,302.2	8,685.3	9,039.8
347	3564	Blowers and fans	6,547.2	7,002.8	7,469.0	8,011.1	8,609.6	9,277.4	9,979.9	10,714.6	11,453.3	12,167.8	12,929.0	13,716.4
348	3565	Packaging machinery	2,921.8	3,036.3	3,143.7	3,157.5	3,210.1	3,314.4	3,444.9	3,586.3	3,727.5	3,867.1	4,009.6	4,153.3
349	3566	Speed changers, drives, and gears	4,964.9	5,202.2	5,209.0	5,255.4	5,354.3	5,532.7	5,758.2	5,990.8	6,213.1	6,416.8	6,641.8	6,887.4
350	3567	Industrial furnaces and ovens	3,706.6	3,899.9	3,931.4	4,004.0	4,140.3	4,335.6	4,560.2	4,799.3	5,030.1	5,262.2	5,501.3	5,745.7
351	3568	Power transmission equipment, n.e.c.	11,763.1	12,228.8	12,665.8	13,150.0	13,740.1	14,434.9	15,148.6	15,852.5	16,503.4	17,088.1	17,659.9	18,240.7
352	3569	General industrial machinery, n.e.c.	123,117.2	112,857.5	112,857.5	115,082.0	121,847.4	135,791.9	150,179.7	163,840.1	175,791.5	187,212.8	198,177.7	209,465.3
353	3571	Electronic computers	16,498.4	18,798.8	20,830.9	22,350.2	23,592.2	24,757.6	25,657.7	26,359.0	27,122.3	28,109.2	29,329.2	30,766.8
354	3572	Computer storage devices	3,063.5	3,063.5	3,064.7	3,144.0	3,323.9	3,658.2	4,061.1	4,523.7	4,913.0	5,225.1	5,562.1	5,958.3
355	3575	Computer terminals	28,904.7	32,933.4	36,543.4	39,165.8	41,030.2	43,097.3	45,045.5	47,240.1	49,593.3	52,205.5	55,060.6	58,386.4
356	3577	Computer peripheral equipment, n.e.c.	2,944.6	3,311.5	3,595.5	3,751.7	3,826.8	3,903.6	3,961.0	4,049.6	4,173.9	4,327.6	4,503.1	4,708.1
357	3578	Calculating and accounting machines	6,998.6	7,922.9	8,576.0	8,838.1	9,420.0	9,942.0	9,942.0	9,942.0	9,942.0	9,942.0	9,942.0	9,942.0
358	3579	Office machines, n.e.c.	1,504.0	1,662.5	1,835.9	2,005.4	2,178.1	2,357.3	2,510.7	2,642.0	2,744.8	2,836.0	2,920.1	3,007.7
359	3581	Automatic vending machines	730.2	808.0	890.1	973.3	1,054.9	1,137.5	1,212.4	1,272.7	1,321.1	1,362.6	1,401.0	1,438.5
360	3582	Commercial laundry equipment												

Table 4.3. (contd)

Sector Num.	SIC	Sector Title	Fourth Quarter Emergency Capacity (millions of 1992\$)											
			1994.4	1995.4	1996.4	1997.4	1998.4	1999.4	2000.4	2001.4	2002.4	2003.4	2004.4	2005.4
361	3595	Refrigeration and heating equipment	32,272.5	35,510.2	38,984.9	42,416.1	45,825.5	49,357.9	52,410.7	54,978.7	56,987.5	58,758.9	60,435.6	62,106.1
362	3598	Measuring and dispensing pumps	1,867.2	2,062.6	2,270.2	2,469.7	2,677.5	2,899.3	3,091.3	3,261.4	3,397.8	3,523.7	3,645.1	3,770.2
363	3599	Service industry machinery, n.e.c.	10,208.7	11,253.6	12,395.1	13,518.8	14,662.4	15,863.7	16,908.1	17,811.2	18,537.9	19,198.0	19,832.5	20,476.8
364	3592	Carburetors, pistons, rings, and valves	3,035.9	3,294.9	3,551.7	3,776.1	3,981.9	4,161.2	4,286.3	4,336.6	4,368.6	4,324.4	4,324.4	4,324.4
365	3593	Fluid power cylinders and actuators	4,231.5	4,257.9	4,302.1	4,353.6	4,423.8	4,522.6	4,648.3	4,785.5	4,918.4	5,029.0	5,123.3	5,222.9
366	3594	Fluid power pumps and motors	1,867.4	1,867.4	1,823.9	1,774.3	1,774.3	1,756.1	1,756.1	1,756.1	1,761.9	1,766.6	1,768.8	1,772.1
367	3596	Scales and balances, except laboratory	1,304.9	1,304.9	1,304.9	1,304.9	1,304.9	1,317.3	1,340.3	1,376.6	1,421.5	1,467.5	1,512.0	1,557.0
368	3599	Industrial machinery, n.e.c.	40,039.6	40,039.6	40,039.6	40,039.6	40,308.5	41,075.9	42,244.9	43,910.0	45,916.2	48,013.6	50,107.8	52,232.3
369	3612	Transformers, except electronic	7,345.7	7,345.7	7,345.7	7,263.6	7,263.6	7,276.5	7,399.2	7,639.9	7,980.7	8,318.4	8,620.6	8,885.1
370	3613	Switchgear and switchboard apparatus	11,885.9	11,885.9	11,885.9	11,885.9	11,885.9	11,885.9	11,999.9	12,306.5	12,789.4	13,284.6	13,744.6	14,169.5
371	3621	Motors and generators	16,350.8	16,989.0	17,377.5	17,884.2	18,030.8	18,560.9	19,155.4	19,742.2	20,337.3	20,956.3	21,586.7	22,232.3
372	3624	Carbon and graphite products	1,806.4	1,817.0	1,838.3	1,875.5	1,915.8	1,939.3	2,083.5	2,210.5	2,324.0	2,431.2	2,538.7	2,648.0
373	3625	Relays and industrial controls	16,571.4	16,685.5	16,960.8	17,488.1	18,185.5	18,901.9	19,677.4	20,448.2	21,223.0	22,008.9	22,816.8	23,652.3
374	3629	Electrical industrial apparatus, nec	5,567.4	5,901.2	6,198.8	6,286.3	6,408.0	6,502.6	6,522.5	6,444.7	6,315.5	6,195.5	6,089.4	5,999.5
375	3631	Household cooking equipment	9,613.6	10,284.6	10,892.4	11,411.0	11,890.9	12,324.5	12,643.4	12,909.6	13,112.6	13,323.6	13,551.4	13,802.3
376	3632	Household refrigerators and freezers	5,880.3	6,416.7	6,964.1	7,450.0	7,908.8	8,368.2	8,749.1	9,088.2	9,388.6	9,704.7	10,042.1	10,405.9
377	3633	Household laundry equipment	4,460.3	4,507.8	4,551.6	4,571.3	4,578.0	4,585.1	4,541.9	4,491.3	4,409.7	4,333.3	4,262.7	4,199.2
378	3634	Electric housewares and fans	2,806.9	2,898.9	2,974.0	3,053.1	3,129.5	3,219.3	3,305.9	3,394.4	3,485.5	3,573.1	3,664.6	3,761.1
379	3635	Household vacuum cleaners	4,474.7	4,821.1	5,176.3	5,503.8	5,843.7	6,192.1	6,517.3	6,821.7	7,115.3	7,410.8	7,722.9	8,054.5
380	3639	Household appliances, n.e.c.	4,427.1	4,496.0	4,496.0	4,496.0	4,511.9	4,568.1	4,630.3	4,707.6	4,788.1	4,865.2	4,991.9	5,106.6
381	3641	Electric lamp bulbs and tubes	7,244.1	7,327.8	7,446.0	7,591.4	7,774.9	8,019.5	8,307.2	8,639.2	8,989.6	9,373.3	9,784.6	10,222.0
382	3643	Current-carrying wiring devices	6,663.6	6,881.2	6,945.7	7,034.8	7,159.6	7,339.8	7,551.6	7,795.1	8,024.8	8,260.5	8,506.8	8,768.4
383	3644	Noncurrent-carrying wiring devices	5,077.5	5,125.7	5,125.7	5,125.7	5,125.7	5,170.1	5,233.4	5,300.7	5,345.7	5,390.7	5,440.8	5,503.6
384	3645	Residential lighting fixtures	6,235.3	6,313.1	6,425.9	6,567.6	6,748.0	6,967.5	7,220.1	7,511.3	7,813.4	8,123.1	8,441.1	8,778.9
385	3646	Commercial lighting fixtures	3,855.2	3,981.3	4,095.8	4,253.7	4,440.5	4,663.8	4,911.9	5,179.5	5,446.0	5,714.0	5,995.3	6,295.1
386	3647	Vehicular lighting equipment	4,978.5	5,263.9	5,609.2	6,006.3	6,462.6	6,996.3	7,578.9	8,207.2	8,859.1	9,546.5	10,278.9	11,072.0
387	3648	Lighting equipment, n.e.c.	18,111.3	20,427.2	22,614.5	24,198.3	25,355.1	26,361.2	27,091.0	27,650.8	27,832.8	27,899.7	27,824.5	27,205.6
388	3652	Pre-recorded records and tapes	3,055.0	3,279.4	3,561.5	3,808.6	4,051.0	4,304.7	4,608.1	4,905.7	5,182.9	5,450.1	5,732.8	5,999.3
389	3661	Telephone and telegraph apparatus	37,828.5	40,803.5	44,038.2	47,277.0	50,659.0	54,064.5	57,133.2	59,853.7	62,136.1	64,300.8	66,548.3	68,998.3
391	3662	Radio and television communication equip.	41,419.3	43,188.5	44,963.0	46,488.3	48,117.9	50,100.2	52,150.2	54,186.1	56,142.2	57,998.1	59,920.2	62,001.2
392	3663	Communications equipment, n.e.c.	9,429.5	10,332.5	11,344.8	12,395.4	13,486.9	14,655.2	15,788.3	16,916.0	18,037.0	19,182.4	20,403.9	21,738.7
393	3671	Electron tubes	4,907.1	5,417.2	5,926.0	6,329.3	6,653.0	6,955.8	7,234.8	7,506.7	7,756.4	8,017.2	8,284.2	8,542.5
394	3672	Printed circuit boards	13,035.5	13,901.4	14,753.0	15,529.6	16,246.7	17,052.5	17,903.9	18,794.6	19,610.3	20,371.8	21,075.2	21,773.3
395	3674	Semiconductors and related devices	69,604.9	74,181.0	78,947.2	83,760.9	88,447.1	94,734.9	102,271.6	111,170.3	120,309.1	129,701.7	139,065.6	148,617.8
396	3675	Electronic capacitors	2,524.5	2,632.5	2,759.9	2,868.9	2,965.6	3,034.8	3,087.6	3,179.6	3,226.1	3,271.7	3,322.1	3,377.4
397	3676	Electronic resistors	1,890.9	1,812.6	1,723.5	1,632.0	1,546.8	1,474.2	1,420.5	1,383.3	1,355.4	1,355.4	1,355.4	1,355.4
398	3677	Electronic coils and transformers	2,225.2	2,225.2	2,234.6	2,285.5	2,361.7	2,491.1	2,527.1	2,543.3	2,559.4	2,580.0	2,606.6	2,633.2
399	3678	Electronic connectors	7,322.8	7,322.8	7,394.1	7,537.2	7,683.1	7,691.1	7,691.1	7,691.1	7,694.7	7,722.5	7,758.2	7,814.1
400	3679	Electronic components, n.e.c.	57,215.3	65,628.4	75,757.4	86,714.9	97,760.7	109,127.1	120,790.5	133,169.3	146,506.1	160,806.8	175,845.5	191,939.8
401	3691	Storage batteries	5,218.5	5,320.1	5,320.1	5,320.1	5,343.3	5,498.1	5,705.0	5,968.8	6,048.7	6,249.9	6,504.0	6,768.9
402	3692	Primary batteries, dry and wet	2,916.2	3,110.3	3,110.3	3,110.3	3,139.3	3,224.2	3,367.4	3,501.0	3,638.1	3,789.3	3,991.6	4,195.7
403	3694	Engine electrical equipment	16,665.8	15,793.8	15,793.8	15,793.8	16,235.0	17,387.9	18,078.6	18,787.5	19,359.6	20,174.9	21,226.6	22,268.9
404	3695	Magnetic and optical recording media	8,283.4	8,171.2	8,171.2	8,171.2	8,391.3	8,795.4	9,269.1	9,852.1	10,027.4	10,498.9	11,066.4	11,630.9
405	3699	Electrical equipment and supplies, n.e.c.	11,903.7	12,770.4	13,826.0	14,529.9	14,206.9	14,296.1	14,538.9	14,905.7	15,297.5	15,864.3	16,618.7	17,464.2

Table 4.3. (contd)

Sector Num.	SIC	Sector Title	Fourth Quarter Emergency Capacity (Millions of 1992\$)											
			1994:4	1995:4	1996:4	1997:4	1998:4	1999:4	2000:4	2001:4	2002:4	2003:4	2004:4	2005:4
406	3711	Motor vehicles and car bodies	313,036.7	310,164.6	310,164.6	304,901.1	304,901.1	304,901.1	303,915.6	308,939.8	314,523.4	320,738.0	328,004.5	
407	3713	Truck and bus bodies	13,325.1	13,782.1	14,213.1	14,640.9	14,640.9	14,640.9	14,750.1	15,015.2	15,490.7	16,432.4	16,896.7	
408	3714	Motor vehicle parts and accessories	189,115.8	187,564.1	187,564.1	187,564.1	187,564.1	187,564.1	167,564.1	167,564.1	175,140.0	179,350.7	184,323.3	
409	3715	Truck trailers	7,080.1	15,836.2	20,287.6	28,908.4	36,919.1	50,276.2	58,449.7	65,400.9	65,810.9	67,286.0	70,543.2	
410	3716	Motor homes	12,016.8	11,625.2	11,765.7	11,849.0	11,863.1	12,443.8	12,507.6	12,863.5	13,024.5	13,715.7	14,015.0	
411	3721	Aircraft	106,902.5	114,584.3	122,730.9	125,214.9	128,082.7	131,709.5	136,006.4	140,518.9	145,258.7	149,901.3	154,484.2	
412	3724	Aircraft engines and engine parts	31,381.3	31,824.1	32,492.5	33,441.0	34,723.5	34,812.3	35,225.2	35,911.2	36,777.1	37,754.6	38,737.7	
413	3728	Aircraft parts and equipment, n.e.c.	38,230.2	40,002.2	41,949.9	44,187.5	44,691.6	45,522.0	46,848.2	48,040.8	49,653.6	51,116.6	54,766.1	
414	3731	Ship building and repairing	18,803.5	17,878.6	16,826.1	15,850.3	14,901.6	14,901.6	14,901.6	14,901.6	14,901.6	14,963.9	15,230.1	
415	3732	Boat building and repairing	10,531.3	10,248.3	10,248.3	9,918.0	9,918.0	10,029.4	10,934.5	10,934.5	10,934.5	11,092.2	11,577.4	
416	3743	Railroad equipment	13,478.2	14,573.0	15,657.0	16,616.9	17,511.3	17,511.3	17,511.3	17,511.3	17,728.8	18,108.0	18,586.0	
417	3751	Motorcycles, bicycles, and parts	3,788.1	3,868.5	3,908.7	3,981.2	4,025.4	4,025.4	4,025.4	4,086.5	4,172.3	4,276.8	4,378.3	
418	3761	Guided missiles and space vehicles	19,441.0	19,689.8	19,785.5	20,081.2	20,868.5	22,098.8	22,515.7	23,033.5	23,581.1	24,140.5	24,692.4	
419	3764	Space propulsion units and parts	7,574.1	7,608.0	7,698.7	7,873.8	8,127.8	8,470.8	8,900.1	9,100.1	9,249.3	9,400.6	9,567.5	
420	3769	Space vehicle equipment, n.e.c.	4,232.4	4,300.7	4,430.5	4,614.5	4,891.0	5,280.0	5,755.2	6,223.3	6,722.0	7,245.2	7,792.6	
421	3792	Travel trailers and campers	11,521.2	11,868.6	12,176.4	12,328.6	12,461.1	12,752.7	12,760.1	12,867.5	13,018.3	13,297.6	13,671.4	
422	3795	Tanks and tank components	4,945.2	5,042.7	5,088.3	5,131.2	5,169.1	5,254.4	5,299.4	5,373.3	5,503.8	5,679.2	5,892.9	
423	3799	Transportation equipment, n.e.c.	9,693.1	10,026.8	10,312.5	10,718.7	10,992.9	11,084.0	11,172.3	11,313.4	11,520.2	11,775.1	12,032.1	
424	3812	Search and navigation equipment	68,720.5	70,376.9	71,978.6	73,449.7	74,862.5	76,850.2	79,250.1	79,865.6	80,418.5	81,596.6	83,053.7	
425	3821	Laboratory apparatus and furniture	4,697.9	4,900.9	5,046.6	5,120.7	5,134.4	5,171.0	5,220.3	5,309.8	5,452.7	5,640.5	5,823.0	
426	3822	Environmental controls	6,708.3	6,841.2	6,993.6	7,157.4	7,337.5	7,571.0	7,860.7	8,202.5	8,547.8	8,916.6	9,297.1	
427	3823	Process control instruments	14,330.7	14,684.5	15,047.0	15,468.7	15,900.4	16,429.5	17,088.6	17,873.6	18,737.3	19,655.1	20,560.8	
428	3824	Fluid meters and counting devices	5,398.9	6,129.9	6,911.4	7,745.2	8,574.0	9,505.3	10,511.3	11,481.7	12,491.0	13,508.1	14,499.1	
429	3825	Instruments to measure electricity	19,855.5	19,944.9	20,155.5	20,468.8	20,907.3	21,511.3	22,232.5	23,007.3	23,900.8	24,727.9	25,448.3	
430	3826	Analytical instruments	12,277.5	12,983.6	13,759.4	14,531.8	15,280.9	15,963.9	16,679.2	17,458.5	18,289.3	19,096.2	19,895.2	
431	3827	Optical instruments and lenses	5,554.3	5,690.1	5,854.9	6,027.0	6,198.7	6,385.4	6,555.2	6,732.9	6,928.4	7,082.0	7,225.5	
432	3829	Measuring and controlling devices, n.e.c.	8,328.0	8,463.2	8,593.1	8,713.0	8,834.0	8,987.7	9,185.1	9,433.7	9,768.6	10,150.4	10,542.8	
433	3841	Surgical and medical instruments	29,873.7	29,957.7	30,424.5	31,250.8	32,506.3	34,113.1	35,882.7	37,545.3	39,180.7	40,786.3	42,442.8	
434	3843	Dental appliances and supplies	4,363.5	4,380.0	4,394.4	4,427.6	4,466.2	4,594.2	4,695.7	4,788.8	4,874.6	4,959.0	5,046.6	
435	3844	Optical equipment and supplies	6,121.7	6,506.7	6,775.8	7,063.1	7,437.9	7,882.2	8,376.8	8,877.6	9,379.5	9,894.2	10,431.3	
436	3845	X ray apparatus and tubes	13,417.0	14,308.8	15,206.2	16,249.4	17,378.6	18,675.0	19,974.0	21,308.0	22,658.8	24,049.9	25,500.6	
437	3845	Electromedical equipment	4,619.9	4,819.5	4,847.6	4,847.6	4,855.7	4,902.6	4,959.7	5,014.1	5,075.9	5,145.6	5,241.6	
438	3851	Ophthalmic goods	31,946.5	34,829.4	37,828.8	40,763.1	43,433.4	45,852.9	48,119.0	50,391.7	52,560.9	54,728.4	56,735.3	
439	3861	Photographic equipment and supplies	1,250.2	1,384.1	1,500.6	1,611.6	1,716.1	1,805.7	1,886.6	1,951.8	2,006.9	2,058.0	2,133.6	
440	3873	Watches, clocks, watchcases, and parts	7,936.0	8,091.6	8,308.8	8,574.3	8,881.8	9,236.7	9,618.6	10,000.5	10,326.0	10,599.4	10,836.3	
441	3911	Jewelry, precious metal	1,411.5	1,450.6	1,497.3	1,548.8	1,603.2	1,658.0	1,720.4	1,788.8	1,863.9	1,931.8	1,986.3	
442	3914	Silverware and plated ware	1,824.1	1,932.4	1,937.7	1,955.1	1,985.5	2,025.5	2,073.2	2,115.1	2,269.5	2,414.1	2,546.7	
443	3915	Jewelers' materials and lapidary work	2,326.8	2,347.2	2,347.2	2,347.2	2,379.2	2,436.6	2,520.5	2,609.0	2,685.5	2,753.9	2,812.0	
444	3931	Musical instruments	411.9	411.9	394.8	377.0	358.9	349.0	331.7	315.9	302.2	288.1	260.0	
445	3942	Dolls and stuffed toys	8,574.4	9,225.4	9,820.3	10,345.4	10,786.3	11,202.7	11,552.3	11,839.2	12,070.5	12,260.5	12,555.8	
446	3944	Games, toys, and children's vehicles	14,801.1	15,286.8	15,781.4	16,207.5	16,563.0	16,835.3	17,259.9	17,531.2	17,764.3	17,974.9	18,193.6	
447	3949	Sporting and athletic goods, n.e.c.	3,773.0	3,773.0	3,773.0	3,773.0	3,887.1	3,941.8	4,004.1	4,080.9	4,154.6	4,212.1	4,258.2	
448	3951	Pens and mechanical pencils	1,255.3	1,329.1	1,411.8	1,500.2	1,592.8	1,692.2	1,796.0	1,902.0	2,007.4	2,115.2	2,225.8	
449	3952	Lead pencils and art goods	883.1	949.0	1,023.0	1,102.7	1,186.5	1,271.8	1,358.3	1,443.9	1,526.2	1,604.9	1,675.5	
450	3953	Marking devices												

Table 4.3. (contd)

Sector Numl.	SIC	Sector Title	Fourth Quarter Emergency Capacity (millions of 1992\$)											
			1994:4	1995:4	1996:4	1997:4	1998:4	1999:4	2000:4	2001:4	2002:4	2003:4	2004:4	2005:4
451	3955	Carbon paper and inked ribbons	1,706.5	1,777.7	1,850.6	1,921.4	1,987.6	2,056.7	2,129.3	2,202.8	2,278.1	2,346.9	2,406.3	2,462.2
452	3961	Costume jewelry	2,933.4	3,021.0	3,110.5	3,196.7	3,280.2	3,361.5	3,427.9	3,483.4	3,547.4	3,592.5	3,614.8	3,622.7
453	3984	Needles, pins, buttons, and fasteners	1,145.2	1,192.9	1,240.3	1,284.6	1,325.3	1,363.3	1,394.9	1,423.3	1,447.8	1,467.8	1,484.4	1,495.5
454	3991	Brooms and brushes	3,182.2	3,281.6	3,409.5	3,532.8	3,662.6	3,804.1	3,944.9	4,087.1	4,178.3	4,276.9	4,377.0	4,485.3
455	3993	Signs and advertising specialties	12,525.9	12,900.1	13,339.7	13,847.3	14,361.5	14,888.6	15,338.8	15,728.6	16,035.5	16,287.5	16,540.1	16,819.1
456	3995	Burial caskets	1,316.7	1,352.6	1,384.4	1,409.3	1,401.6	1,404.0	1,421.7	1,437.4	1,451.0	1,459.1	1,467.0	1,477.0
457	3996	Hard surface floor coverings, n.e.c.	2,104.6	2,125.7	2,161.4	2,204.3	2,246.7	2,286.0	2,315.3	2,332.8	2,383.5	2,425.0	2,466.2	2,511.1
458	3999	Manufacturing industries, n.e.c.	13,941.1	14,192.7	14,499.6	14,849.2	15,168.9	15,512.0	15,812.9	16,051.7	16,242.1	16,372.3	16,500.1	16,652.0

elasticity parameter to 1.0. As mentioned above, strictly speaking, the capacity projections would apply to the fourth quarter of the years shown. For use in annual models, a user might consider using the previous and current year to construct an annual average capacity.

In the last column of Table 4.2, we provide a means of calculating an alternative measure of emergency capacity that relies on the shift factor approach of the 1991 study. The values shown are factors that can be used to multiply the emergency capacity numbers in the prior columns. These numbers are based upon the estimated weekly hours worked for the industry in 1994:4 as computed from information on average days per week and hours per day.^(a) An alternative capacity measure for this time period was developed by assuming output would expand in proportion to the increase in available weekly hours. The number of available hours is somewhat less than 168, assuming downtime and maintenance requirements as described in Belzer et al. (1991). Some adjustment is also made for reduced productivity of workers during night shifts. The survey-based capacity measure for 1994:4 was divided into this shift-factor-based capacity measure. The resulting factor is shown in column eighteen and can be used essentially to derive an upper bound to the survey-based measure. In cases where the shift-factor-based capacity was less than the survey-based measure in 1994:4, the adjustment factor was set equal to 1.00.

4.2.5 Growth Rates of Capacity

The unweighted average growth rate of capacity for all 458 industries from 1995 to 2005 is 2.3% per year. This growth is slightly higher than that projected for GDP in the INFORUM model. The higher growth is consistent with INFORUM's significantly higher growth rate for Producers' Durable Equipment as a whole.

The advantage of using the INFORUM interindustry model is that it can indicate a wide distribution of industry growth rates consistent with the 2.1% per year growth of GDP. Ten percent of the 4-digit industries (48) are projected to have declining capacity between 1995 and 2005. Growth rates between 0 and 2.5 percent per year are shown for 183 sectors, while emergency capacity in 163 sectors is projected to increase between 2.5 and 5.0% per year. Finally, capacity in a group of 65 industries—including many electronics and computer-oriented industries—is expected to increase more than 5 percent per year over the next 8 years.

The data in Tables 4.2 and 4.3 are available on diskette from FEMA. The information is presented in such a fashion that it should be suitable for many types of applications.

(a) The Bureau of Census provided these unpublished data for use in this study.

5.0 References

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Appendix A

Data Sources and Construction

Appendix A

Data Sources and Construction

This appendix briefly describes the key data sources and some of the steps undertaken to construct the final data sets used in the capacity estimation. The appendix also includes the industry definitions used by the Federal Reserve Board's Division of Research and Statistics in the development of capital stocks and the industry definitions used by INFORUM. The final table shows the linkage between the 4-digit SIC sectors used in this study and these other industry datasets.

A.1 Extend Industry Output Series for Use with Capital Stocks

The production series data used in prior studies at the 4-digit SIC level of manufacturing industries extended over the period 1958-1986. An extension of this time series was necessary to estimate the capital stock-output regressions and perform the projections of capacity. The output series was also redefined to reflect the 1987 SIC changes and be consistent with the most recent SPC reports.

The 1991 PNNL capacity study (Belzer et al. 1991) used exclusively the 4-digit production data series developed by the Office of Business Analysis (OBA) within the Department of Commerce for the period 1958-1986. These data rely on the Censuses of Manufactures as well as the Annual Survey of Manufactures information on value of shipments and inventory change, subsequently deflated by appropriate 4-digit SIC deflators. This data base contains the information in current dollars and in 1982 constant dollars.

In the current study, the OBA data were updated with manufacturing establishment shipments, as constructed by the BEA, National Income and Wealth Division, for use in constructing Gross Product by Industry estimates. These data were released in the summer of 1995. These data are annual constant dollar (1987) shipments for establishments classified by 4-digit manufacturing industries, from 1977 to 1993. The sources for the shipment totals are the U.S. Bureau of Census publications, Censuses of Manufactures (1977, 1982, 1987, and 1992) as well as the Annual Survey of Manufactures (1973-76, 1978-81, 1983-86, and 1988-1991).

The BEA data were available from 1977 through 1987 on a 1972 SIC basis and from 1987 through 1993 on a 1987 SIC basis. The BEA data on the 1972 SIC basis were used to extrapolate the OBA data from 1986 to 1987. The 1987-SIC basis information was used to extrapolate the series through 1993. A simple SIC concordance was developed to link outputs via the two SIC

classifications. In some cases, industries from the older 1972 SIC basis were combined in the more recent 1987 classification. In such cases, the historical OBA series prior to 1987 were combined and then extrapolated with the 1987-1993 BEA data on a 1987 basis.

In other cases, industries in the 1972 classification were disaggregated in the 1987 classification. In these cases, the pre-1987 values of these industries were identical and the differential changes only occurred subsequent to 1987. Note that this procedure does not try to "share" the old industry output into what it would be under the new definition. However, except that the output level is greater, the output growth rate is identical to that which would be obtained if a constant share assumption were made. Thus, the final set of outputs is developed to have growth rates consistent with a 1987 SIC classification, but the output levels remain similar to the older data set from OBA on the 1972 classification.^(a) This facilitates comparison with the OBA outputs published in the 1991 PNNL report.

A.2 Update Industry Output Series for 1994 Benchmark

The 1994 level of industrial output shown in Table 4.2 is based upon the most recent set of manufacturing shipments data from BEA (Release date: September 1996). Current-dollar estimates for 458 four-digit SIC industries were available on a 1987 SIC basis from 1987 through 1994. As above, these data are based upon the Census Bureau's Annual Survey of Manufactures.

Compared with prior releases, the 1996 release included chain-type quantity indexes (1992=100), rather than constant-dollar series. The values in column four of Table 4.2 are derived by extrapolating the 1992 current-dollar estimates with the appropriate quantity index.

A.3 Industry Concordances

Tables A.1 through A.3 show how the industries were linked across the 4-digit SIC, the Federal Reserve Board capital stock sectors, and the INFORUM production sectors. Table A.1 lists the 164 manufacturing sectors for which the Federal Reserve Board's Division of Research and Statistics developed capital stocks (Mohr and Gilbert 1995). Table A.2 shows the 320 sectors defined in the long-term model developed by INFORUM at the University of Maryland. About 240 of these sectors--those in manufacturing--are used in the study here.

Table A.3 provides a concordance between the 458 4-digit SIC sectors and the FRB capital stock and the INFORUM production sectors.

(a) Of course other changes between the 1987 and 1972 involve portions of one 4-digit SIC being moved. We understand that the Census Bureau may release historical data on a consistent 1987 SIC, but as yet, such information is not available. Accordingly, the linkage developed here addresses some of the largest changes in definitional content, but ignores many others.

Table A.1. Federal Reserve Board Capital Stock Sectors

<u>Sector Num.</u>	<u>SIC: Industry Title</u>
1	201: Meat Products
2	202: Dairy Products
3	203: Preserved Fruits and Vegetables
4	204: Grain Mill Products
5	205: Bakery Products
6	206: Sugar and Confectionery Products
7	207: Fats and Oils
8	208: Beverages
9	209: Misc. Food and Kindred Products
10	211: Cigarettes
11	212: Cigars
12	213: Chewing and Smoking Tobacco
13	214: Tobacco Stemming and Redrying
14	221: Broadwoven Fabric Mills, Cotton
15	222: Broadwoven Fabric Mills, Manmade
16	223: Broadwoven Fabric Mills, Wool
17	224: Narrow Fabric Mills
18	225: Knitting Mills
19	226: Textile Finishing, Except Wool
20	227: Carpets and Rugs
21	228: Yarn and Thread Mills
22	229: Miscellaneous Textile Goods
23	231: Men's and Boys' Suits and Coats
24	232: Men's and Boys' Furnishings
25	233: Women's and Misses' Outerwear
26	234: Women's and Children's Undergarments
27	235: Hats, Caps, and Millinery
28	236: Girls' and Children's Outerwear
29	237: Fur Goods
30	238: Miscellaneous Apparel and Accessories
31	239: Misc. Fabricated Textile Products
32	241: Logging
33	242: Sawmills and Planing Mills
34	243: Millwork, Plywood & Structural Members
35	244: Wood Containers
36	245: Wood Buildings and Mobile Homes
37	249: Miscellaneous Wood Products
38	251: Household Furniture
39	252: Office Furniture
40	253: Public Building & Related Furniture
41	254: Partitions and Fixtures
42	259: Miscellaneous Furniture and Fixtures
43	261: Pulp Mills
44	262: Paper Mills
45	263: Paperboard Mills
46	265: Paperboard Containers and Boxes
47	267: Misc. Converted Paper Products
48	271: Newspapers
49	272: Periodicals
50	273: Books
51	274: Miscellaneous Publishing
52	275: Commercial Printing
53	276: Manifold Business Forms
54	277: Greeting Cards
55	278: Blankbooks and Bookbinding
56	279: Printing Trade Services

Table A.1. (contd)

<u>Sector Num.</u>	<u>SIC: Industry Title</u>
57	281: Industrial Inorganic Chemicals
58	282: Plastics Materials and Synthetics
59	2821: Plastics materials and resins
60	2822: Synthetic rubber
61	2823: Cellulosic manmade fibers
62	2824: Organic fibers, noncellulosic
63	283: Drugs
64	284: Soap, Cleaners, and Toilet Goods
65	285: Paints and Allied Products
66	286: Industrial Organic Chemicals
67	287: Agricultural Chemicals
68	2873: Nitrogenous fertilizers
69	2874: Phosphatic fertilizers
70	2875: Fertilizers, mixing only
71	2879: Agricultural chemicals, nec
72	289: Miscellaneous Chemical Products
73	291: Petroleum Refining
74	295: Asphalt Paving and Roofing Materials
75	299: Misc. Petroleum and Coal Products
76	301: Tires and Inner Tubes
77	302: Rubber and Plastics Footwear
78	305: Hose & Belting & Gaskets & Packing
79	306: Fabricated Rubber Products, NEC
80	308: Miscellaneous Plastics Products, NEC
81	311: Leather Tanning and Finishing
82	313: Footwear Cut Stock
83	314: Footwear, Except Rubber
84	315: Leather Gloves and Mittens
85	316: Luggage
86	317: Handbags and Personal Leather Goods
87	319: Leather Goods, NEC
88	321: Flat Glass
89	322: Glass and Glassware, Pressed or Blown
90	323: Products of Purchased Glass
91	324: Cement, Hydraulic
92	325: Structural Clay Products
93	326: Pottery and Related Products
94	327: Concrete, Gypsum, and Plaster Products
95	328: Cut Stone and Stone Products
96	329: Misc. Nonmetallic Mineral Products
97	331: Blast Furnace and Basic Steel Products
98	332: Iron and Steel Foundries
99	333: Primary Nonferrous Metals
100	3331: Primary copper
101	3334: Primary aluminum
102	3339: Primary nonferrous metals, nec
103	334: Secondary Nonferrous Metals
104	335: Nonferrous Rolling and Drawing
105	336: Nonferrous Foundries (Castings)
106	339: Miscellaneous Primary Metal Products
107	341: Metal Cans and Shipping Containers
108	342: Cutlery, Handtools, and Hardware
109	343: Plumbing and Heating, Except Electric
110	344: Fabricated Structural Metal Products
111	345: Screw Machine Products, Bolts, Etc.
112	346: Metal Forgings and Stampings

Table A.1. (contd)

<u>Sector Num.</u>	<u>SIC: Industry Title</u>
113	347: Metal Services, NEC
114	348: Ordnance and Accessories, NEC
115	349: Misc. Fabricated Metal Products
116	351: Engines and Turbines
117	352: Farm and Garden Machinery
118	353: Construction and Related Machinery
119	354: Metalworking Machinery
120	355: Special Industry Machinery
121	356: General Industrial Machinery
122	357: Computer and Office Equipment
123	358: Refrigeration and Service Machinery
124	359: Industrial Machinery, NEC
125	361: Electric Distribution Equipment
126	362: Electrical Industrial Apparatus
127	363: Household Appliances
128	364: Electric Lighting and Wiring Equipment
129	365: Household Audio and Video Equipment
130	366: Communications Equipment
131	367: Electronic Components and Accessories
132	3671: Electron tubes
133	3672: Printed circuit boards
134	3674: Semiconductors and related devices
135	3675: Electronic capacitors
136	3676: Electronic resistors
137	3677: Electronic coils and transformers
138	3678: Electronic connectors
139	3679: Electronic components, nec
140	369: Misc. Electrical Equipment & Supplies
141	371: Motor Vehicles and Equipment
142	3711: Motor vehicles and car bodies
143	3713: Truck and bus bodies
144	3714: Motor vehicle parts and accessories
145	3715: Truck trailers
146	3716: Motor homes
147	372: Aircraft and Parts
148	373: Ship and Boat Building and Repairing
149	374: Railroad Equipment
150	375: Motorcycles, Bicycles, and Parts
151	376: Guided Missiles, Space Vehicles, Parts
152	379: Miscellaneous Transportation Equipment
153	381: Search and Navigation Equipment
154	382: Measuring and Controlling Devices
155	384: Medical Instruments and Supplies
156	385: Ophthalmic Goods
157	386: Photographic Equipment and Supplies
158	387: Watches, Clocks, Watchcases & Parts
159	391: Jewelry, Silverware, and Plated Ware
160	393: Musical Instruments
161	394: Toys and Sporting Goods
162	395: Pens, Pencils, Office, & Art Supplies
163	396: Costume Jewelry and Notions
164	399: Miscellaneous Manufactures

Table A.2. INFORUM Sector Titles 1987 SIC

<u>#</u>	<u>Sector Title</u>	<u>SIC Correspondence</u>
1	Dairy farm products	241
2	Poultry and eggs	250 -254
3	Meat animals and other livestock	210 270
4	Cotton	131
5	Grains	111 112 115 118 pt 119 pt 139
6	Tobacco	132
7	Fruit,vegetables and other crops	pt 119 133 134 pt 139 170 173 179 161 116
8	Forestry products	800 -850 970
9	Fishery products	910
10	Agriculture,forestry and fishery services	pt 180 254 700 780 850 920
11	Iron ores	1010 1060
12	Copper ore	1020
13	Other non-ferrous ores	1030 1040 1050 1080 1090
14	Coal mining	1200
15	Natural gas extraction	1312
16	Crude oil extraction	1311 1320 1380
17	Stone and clay quarrying and mining	1410 1420 1440 1450 1480 1490
18	Chemical and fertilizer minerals mining	1470
19	New construction	1600
20	Maintenance construction	1500
21	Guided missiles and space vehicles	3761
22	Ammunition, except small arms	3483
23	Tanks and tank components	3795
24	Small arms	3484
25	Small arms ammunition	3482
26	Other ordnance and accessories	3489
27	Meat packing plants, sausage and other prepared me	2011 2013
28	Poultry slaughtering and processing	2015
29	Dairy products, except fluid milk	2021 2022 2023 2024
30	Fluid milk	2026
31	Fish and seafoods	2091 2092
32	Preserved fruits and vegetables, frozen bakery produ	2032 2033 2034 2035 2037 2038
33	Flour, cereals and other grain mill products	2041 2043 2045
34	Prepared animal feeds	2047 2048
35	Rice milling	2044
36	Wet corn milling	2046
37	Bakery products	2051 2052 2053
38	Sugar	2061 2062 2063
39	Confectionery, chocolate products and roasted nuts	2064 2066 2067 2068
40	Beer, malt beverages and malt	2082 2083
41	Wines, brandy and brandy spirits	2084
42	Distilled and blended liquors	2085
43	Soft drinks and flavorings	2086 2087
44	Vegetable oil mills	2074, 2075, 2076
45	Animal and marine fats and oils	2077
46	Shortening, table oils and edible fats	2079
47	Roasted coffee	2095
48	Miscellaneous food preparations	2096 2097 2098 2099
49	Cigarettes	2110
50	Cigars	2120
51	Chewing and smoking tobacco and snuff	2130
52	Tobacco stemming and redrying	2140
53	Broadwoven fabric mills	2210 2220 2230 2261 2262
54	Narrow fabric mills	2240
55	Yarn and thread mills, textile finishers	2269 2281 2282 2284
56	Carpets and rugs	2270
57	Miscellaneous textile goods	2290
58	Knitting mills	2251 2252 2253 2254 2257 2258 2259
59	Apparel	2300-2390
60	Household textile products	2391 2392
61	Miscellaneous fabricated textile products	2393 2394 2395 2396 2397 2399 39996
62	Logging camps and contractors	2411
63	Sawmills and planing mills	2421 2426 2429
64	Milwork and wood kitchen cabinets	2431 2434
65	Veneer and plywood	2435 2436
66	Structural wood members, n.e.c.	2439
67	Prefabricated wood buildings and components	2452

Table A.2. (contd)

#.	Sector Title	SIC Correspondence
68	Wood preserving	2491
69	Wood pallets and skids	2448
70	Wood containers	2441 2449
71	Particleboard and wood products, n.e.c.	2493 2499
72	Household furniture	2511 2512 2514 2515 2517 2519
73	Office furniture	2521 2522
74	Public building and related furniture	2531
75	Partitions and fixtures	2541 2542
76	Furniture and fixtures, n.e.c.	2591 2599
77	Pulp mills	2610
78	Paper mills, including building paper	2620
79	Paperboard mills	2630
80	Bags, except textile bags	2673 2674
81	Paperboard containers and boxes	2650
82	Paper coating and glazing, die cut paper	2671 2672 2675
83	Envelopes and stationery	2677 2678
84	Converted paper products, n.e.c.	2679
85	Sanitary paper products	2676
86	Newspaper publishing and printing	2710
87	Periodical publishing and printing	2720
88	Book publishing and printing	2731 2732
89	Miscellaneous publishing	2740
90	Commercial printing	2752 2754 2759
91	Greeting card publishing	2770
92	Printing trade services	2791 2796
93	Blankbooks and bookbinding	2782 2789
94	Manifold business forms	2781
95	Industrial inorganic chemicals	2812 2813 2816 2819, excl. 28195
96	Industrial organic chemicals	2865 2869
97	Gum and wood chemicals	2861
98	Agricultural chemicals	2873 2874 2875 2879
99	Adhesives and sealants	2891
100	Explosives	2892
101	Chemical preparations, n.e.c.	2893 2895 2899
102	Plastics materials and resins	2821
103	Synthetic rubber	2822
104	Cellulosic man-made fibers	2823
105	Synthetic organic fibers, except cellulosic	2824
106	Drugs	2830
107	Soaps and cleaners	2841 2842 2843
108	Perfumes, cosmetics and other toilet preparations	2844
109	Paints, varnishes and related products	2850
110	Petroleum refining except fuel oil	2911 2917 2992 2999
111	Fuel oil	2915
112	Asphalt paving and coatings	2951 2952
113	Tires and inner tubes	3010
114	Fabricated rubber products, n.e.c.	3060
115	Rubber and plastics footwear	3020
116	Rubber and plastics hose and belting	3052
117	Gaskets, packing, and sealing devices	3053
118	Miscellaneous plastic products	3080
119	Leather tanning and finishing	3110
120	Boot and shoe cut stock and findings	3130
121	Footwear, except rubber	3142 3143 3144 3149
122	Other leather goods	3150 3160 3171 3172 3199
123	Glass and glass products, n.e.c.	3210 3229 3230
124	Glass containers	3221
125	Cement, hydraulic	3240
126	Structural clay products	3251 3253 3255 3259
127	Pottery and related products	3261 3262 3263 3264 3269
128	Concrete and concrete products	3271 3272 3273
129	Lime	3274
130	Gypsum products	3275
131	Cut stone and stone products	3280
132	Nonmetallic mineral products, n.e.c.	3291 3292 3295 3296 3297 3299
133	Steel mills, blast furnaces, and rolling and finishing	3312 3313 3315 3316 3317
134	Iron and steel foundries	3320
135	Iron and steel forgings	3462

Table A.2. (contd)

#	Sector Title	SIC Correspondence
136	Miscellaneous primary metal products	3398 3399
137	Primary smelting and refining of copper	3331, pt. 3341
138	Primary smelting and refining of aluminum	3334 28185 pt. 3341
139	Lead, zinc and other primary nonferrous metals	3339
140	Copper rolling and drawing	3351
141	Aluminum rolling and drawing	3353 3354 3355
142	Other nonferrous rolling and drawing, and nonferrous	3356 3357
143	Aluminum foundries and castings	3363 3365
144	Copper foundries	3366
145	Nonferrous castings and forgings	3364 3369 3463
146	Metal cans	3411
147	Metal shipping barrels, drums, kegs and pails	3412
148	Metal sanitary ware and plumbing fixtures	3431 3432
149	Heating equipment, except electrical and warm air fur	3433
150	Fabricated structural metal products	3441 3442
151	Fabricated plate work (boiler shops)	3443
152	Sheet metal and other metal work	3444 3446 3448 3449
153	Screw machine products, bolts and nuts	3450
154	Automotive stampings	3465
155	Crowns and closures	3466
156	Metal stampings, n.e.c.	3469
157	Cutlery and hand tools	3421 3423 3425
158	Hardware, n.e.c.	3429
159	Metal plating, polishing and coating	3471 3479
160	Metal foil and leaf	3497
161	Miscellaneous fabricated wire products	3495 3496
162	Steel springs, except wire	3493
163	Pipe, valves and pipe fittings	3491 3492 3494 3498
164	Fabricated metal products, n.e.c.	3499
165	Steam, gas and hydraulic turbines	3511
166	Internal combust engines, n.e.c.	3519
167	Farm machinery and equipment	3523
168	Garden tractors and lawn and garden equipment	3524
169	Construction machinery and equipment	3531
170	Mining machinery and equipment, except oil and gas	3532
171	Oil and gas field machinery	3533
172	Elevators and moving stairways	3534
173	Conveyers, hoists and cranes	3535 3536
174	Industrial trucks, tractors, trailers and stackers	3537
175	Machine tools, metal cutting types	3541
176	Machine tools, metal forming types	3542
177	Special dies, jigs, molds and cutting tools	3544 3545
178	Power driven hand tools	3546
179	Rolling mill machinery and equipment	3547
180	Metalworking machinery, n.e.c.	3549
181	Food products machinery	3556
182	Textile machinery	3552
183	Woodworking machinery	3553
184	Paper industries machinery	3554
185	Printing trades machinery and equipment	3555
186	Special industrial machinery, n.e.c.	3559
187	Pumps and compressors	3561 3563
188	Ball and roller bearings	3562
189	Blowers and exhaust and ventilation fans	3564
190	Industrial patterns	3543
191	Packaging machinery and general industrial machine	3565 3569
192	Mechanical power transmission equipment	3566 3568
193	Industrial process furnaces and ovens	3567
194	Carburetors, pistons, piston rings and valves	3592
195	Fluid power equipment	3593 3594
196	Scales and balances	3596
197	Industrial and commercial machinery, n.e.c.	3599
198	Electronic computers	3571
199	Computer peripheral equipment	3572 3575 3577
200	Calculators and accounting machinery	3578
201	Office machines and typewriters	3579
202	Automatic merchandising equipment	3581
203	Commercial laundry, dry cleaning and pressing mac	3582

Table A.2. (contd)

#	Sector Title	SIC Correspondence
204	Air conditioning, heating and refrigeration equipment	3585
205	Measuring and dispensing pumps	3586
206	Service industry machinery, n.e.c.	3589
207	Instruments to measure electricity	3825
208	Transformers	3612
209	Switchgear and switchboard apparatus	3613
210	Motors and generators	3621
211	Relays and industrial controls	3625
212	Welding and soldering equipment	3548
213	Electrical industrial apparatus	3624 3629
214	Major household appliances	3631 3632 3633
215	Other household appliances	3634 3635 3639
216	Electric lamps, light fixtures and wiring	3641 3643 3644 3645 3646 3647 3648
217	Household audio and video equipment	3651
218	Prerecorded records and tapes	3652
219	Telephones, switchboards, modems, faxes, etc.	3661
220	Radio and TV broadcasting and communication equi	3663 3669
221	Electron tubes	3671
222	Semiconductors and related devices	3674
223	Electronic components, n.e.c.	3672 3675 3676 3677 3678 3679
224	Storage batteries	3691
225	Primary batteries, dry and wet	3692
226	X-ray and irradiation apparatus	3844
227	Electromedical and electrotherapeutic apparatus	3845
228	Engine electrical equipment	3694
229	Magnetic and optical recording media	3695
230	Electrical machinery, equipment and supplies, n.e.c.	3699
231	Truck and bus bodies	3713
232	Truck trailers	3715
233	Motor vehicles and passenger car bodies	3711
234	Motor vehicle parts and accessories	3714
235	Aircraft	3721
236	Aircraft and missile engines, propulsion units and par	3724 3764
237	Aircraft and missile parts and auxiliary equipment, n.	3728 3769
238	Ship building and repairing	3731
239	Boat building and repairing	3732
240	Railroad equipment	3740
241	Motorcycles, bicycles and parts	3750
242	Travel trailers and campers	3792
243	Mobile homes	2451
244	Motor homes	3716
245	Transportation equipment, n.e.c.	3799
246	Search and navigation equipment	3812
247	Laboratory apparatus and furniture	3821
248	Measuring devices and environmental controls	3822 3823 3824 3829
249	Surgical and medical instruments	3841
250	Surgical appliances and supplies	3842
251	Dental equipment and supplies	3843
252	Watches, clocks, clockwork operated devices and pa	3870
253	Laboratory and optical instruments	3826 3827
254	Ophthalmic goods	3850
255	Photographic equipment and supplies	3860
256	Jewelry, precious metal, silverware and plated wares	3911 3914 3915
257	Musical instruments	3930
258	Games, toys and play vehicles	3942 3944
259	Sport and athletic goods, n.e.c.	3949
260	Pens, pencils and other office and artists' materials	3951 3952 3953 3955
261	Costume jewelry and notions	3961 3965
262	Manufacturing, n.e.c.	3991 3993 3995 3996 3999
263	Railroads	4000 4740 pt. 4789
264	Local and suburban passenger transportation	4100
265	Trucking and warehousing	4200 pt. 4789
266	Water transportation	4400
267	Airlines	4500
268	Pipelines	4600
269	Transportation services	4700
270	Telephone and telegraph	4800 -4830

Table A.2. (contd)

#	Sector Title	SIC Correspondence
271	Radio and TV broadcasting	4830
272	Electric utilities	4910 pt 4930
273	Natural gas	4920 pt 4930
274	Water, sewer, steam and irrigation services	4940 4950 4960 4970 pt 4930
275	Wholesale trade	5000 5100
276	Retail trade	5200 5300 5400 5500 5600 5700 5900
277	Eating and drinking places	5800 pt 7000
278	Banking	60
279	Credit agencies other than banks	61 67 -6732
280	Security and commodity brokers, dealers, exchanges	62
281	Insurance carriers	63
282	Insurance agents, brokers and service	64
283	Owner-occupied dwellings	
284	Real estate	6500 6600 1531
285	Royalties	I-O sector, but no SIC
286	Hotels, rooming houses, camps and other lodging pl	7000
287	Personal and repair services	7200 7620 7630 7640
288	Personnel supply services	736
289	Computer and data processing services	737
290	Research laboratories and management consulting	8731 8732 8734 8740
291	Equipment rental and leasing services	7350
292	Advertising	7310
293	Other business services	7320 7330 7340 7380 7390 7690
294	Legal services	8110
295	Engineering and architectural services	8710
296	Other professional services, including accounting	8720 8900
297	Auto rental and leasing	751
298	Auto repair and services	75 other
299	Motion pictures	78
300	Video tape rental	7840
301	Amusements and recreation services	7910 7920 7930 7941 7948 7990
302	Private hospitals	806
303	Physicians, excluding dentists	801 803
304	Dentists, and miscellaneous medical services	0740 8020 8041 8043 8048 8070 8080 8090
305	Nursing homes	805
306	Education and libraries	82
307	Social services	83
308	Museums, non-profits, research and private educatio	84 8650 8690 8733 8732
309	Membership organizations	86
310	United States Postal Service	4311
311	Federal government enterprises	
312	State and local government enterprises	
313	Non-competitive imports	
314	Domestic servants	
315	Scrap and used goods	
316	Unimportant industry	
317	Government industry compensation	
318	Rest of world industry	
319	Inventory valuation adjustment	
320	By-products	

Table A.3. Industry Concordance: 4-Digit SIC, FRB Capital Stock and INFORUM

Sector Num.	SIC	Sector Title	FRB Capital Stock Sec.	INFORUM Sector
1	2011	Meatpacking plants	1	27
2	2013	Sausages and other prepared meats	1	27
3	2015	Poultry slaughtering and processing	1	28
4	2021	Creamery butter	2	29
5	2022	Cheese, natural and processed	2	29
6	2023	Dry, condensed and evap. dairy products	2	29
7	2024	Ice cream and frozen desserts	2	29
8	2026	Fluid milk	2	30
9	2032	Canned specialties	3	32
10	2033	Canned fruits and vegetables	3	32
11	2034	Dehydrated fruits, vegetables, and soups	3	32
12	2035	Pickles, sauces, and salad dressings	3	32
13	2037	Frozen fruits and vegetables	3	32
14	2038	Frozen specialties, n.e.c.	3	32
15	2041	Flour, and other grain mill products	4	33
16	2043	Cereal breakfast foods	4	33
17	2044	Rice milling	4	35
18	2045	Prepared flour mixes and doughs	4	33
19	2046	Wet corn milling	4	36
20	2047	Dog and cat food	4	34
21	2048	Prepared feeds, n.e.c.	4	34
22	2051	Bread, cake, and related products	5	37
23	2052	Cookies and crackers	5	37
24	2053	Frozen bakery products, except bread	5	37
25	2061	Raw cane sugar	6	38
26	2062	Cane sugar refining	6	38
27	2063	Beet sugar	6	38
28	2064	Candy and other confectionary products	6	39
29	2066	Chocolate and cocoa products	6	39
30	2068	Salted and roasted nuts and seeds	6	32
31	2074	Cottonseed oil mills	7	44
32	2075	Soybean oil mills	7	44
33	2078	Vegetable oil mills, n.e.c.	7	44
34	2077	Animal and marine fats and oils	7	45
35	2079	Edible fats and oils, n.e.c.	7	46
36	2082	Malt beverages	8	40
37	2083	Malt	8	40
38	2084	Wines, brandy, and brandy spirits	8	41
39	2085	Distilled and blended liquors	8	42
40	2086	Bottled and canned soft drinks	8	43
41	2087	Flavoring extracts and syrups, n.e.c.	8	43
42	2091	Canned and cured fish and seafoods	9	31
43	2092	Fresh or frozen prepared fish	9	31
44	2095	Roasted coffee	9	47
45	2096	Potato chips and similar snacks	9	48
46	2097	Manufactured ice	9	48
47	2098	Macaroni and spaghetti	9	48
48	2099	Food preparations, n.e.c.	9	48
49	2111	Cigarettes	10	49
50	2121	Cigars	11	50
51	2131	Chewing and smoking tobacco	12	51
52	2141	Tobacco stemming and redrying	13	52
53	2211	Broadwoven fabrics mills, cotton	14	53
54	2221	Broadwoven fabrics mills, manmade fiber	15	53
55	2231	Broadwoven fabrics mills, wool	16	53
56	2241	Narrow fabrics mills	17	54
57	2251	Women's hosiery, except socks	18	58
58	2252	Hosiery, n.e.c.	18	58
59	2253	Knit outerwear mills	18	58
60	2254	Knit underwear mills	18	58
61	2257	Weft knit fabrics mills	18	58
62	2258	Lace and warp knit fabrics mills	18	58
63	2259	Knitting mills, n.e.c.	18	58
64	2261	Finishing plants, cotton	19	53
65	2262	Finishing plants, manmade	19	53
66	2269	Finishing plants, n.e.c.	19	55
67	2273	Carpets and rugs	20	56
68	2281	Yarn spinning mills	21	55
69	2282	Throwing and winding mills	21	55
70	2284	Thread mills	21	55
71	2295	Coated fabrics, not rubberized	22	57
72	2296	Tire cord and fabrics	22	57

Table A.3. (contd)

Sector Num.	SIC	Sector Title	FRB Capital Stock Sec.	INFORUM Sector
73	2297	Nonwoven fabrics	22	57
74	2298	Cordage and twine	22	57
75	2299	Textile goods, n.e.c.	22	57
76	2311	Men's and boys' suits and coats	23	59
77	2321	Men's and boys' shirts	24	59
78	2322	Men's and boys' underwear and nightwear	24	59
79	2323	Men's and boys' neckwear	24	59
80	2325	Mens' and boys' trousers and slacks	24	59
81	2326	Men's and boys' work clothing	24	59
82	2329	Men's and boys' clothing, n.e.c.	24	59
83	2331	Women's and juniors' blouses and shirts	25	59
84	2335	Women's and juniors' dresses	25	59
85	2337	Women's and juniors' suits and coats	25	59
86	2339	Women's and juniors' outerwear, n.e.c.	25	59
87	2341	Women's and children's underwear	26	59
88	2342	Bralettes, girdles, and allied garments	26	59
89	2353	Hats, caps, and millinery	27	59
90	2361	Girls' and children's dresses and blouses	28	59
91	2369	Girls' and children's outerwear, n.e.c.	28	59
92	2371	Fur goods	29	59
93	2381	Fabrics dress and work gloves	30	59
94	2384	Robes and dressing gowns	30	59
95	2385	Waterproof outerwear	30	59
96	2386	Leather and sheep lined clothing	30	59
97	2387	Apparel belts	30	59
98	2389	Apparel and accessories, n.e.c.	30	59
99	2391	Curtains and draperies	31	60
100	2392	House furnishings, n.e.c.	31	60
101	2393	Textile bags	31	61
102	2394	Canvas and related products	31	61
103	2395	Pleating and stitching	31	61
104	2396	Automotive and apparel trimmings	31	61
105	2397	Schiffli machine embroideries	31	61
106	2399	Fabricated textile products, n.e.c.	31	61
107	2411	Logging	32	62
108	2421	Sawmills and planing mills, general	33	63
109	2426	Hardwood dimension and flooring mills	33	63
110	2429	Special product sawmills, n.e.c.	33	63
111	2431	Millwork	34	64
112	2434	Wood kitchen cabinets	34	64
113	2435	Hardwood veneer and plywood	34	65
114	2436	Softwood veneer and plywood	34	65
115	2439	Structural wood members, n.e.c.	34	66
116	2441	Nailed wood boxes and shooks	35	70
117	2448	Wood pallets and skids	35	69
118	2449	Wood containers, n.e.c.	35	70
119	2451	Mobile homes	36	243
120	2452	Prefabricated wood buildings	36	67
121	2491	Wood preserving	37	68
122	2493	Reconstituted wood products	37	71
123	2499	Wood products, n.e.c.	37	71
124	2511	Wood household furniture	38	72
125	2512	Upholstered household furniture	38	72
126	2514	Metal household furniture	38	72
127	2515	Mattresses and bedsprings	38	72
128	2517	Wood television and radio cabinets	38	72
129	2519	Household furniture, n.e.c.	38	72
130	2521	Wood office furniture	39	73
131	2522	Office furniture, except wood	39	73
132	2531	Public building and related furniture	40	74
133	2541	Wood partitions and fixtures	41	75
134	2542	Partitions and fixtures, except wood	41	75
135	2591	Drapery hardware and blinds and shades	42	76
136	2599	Furniture and fixtures, n.e.c.	42	76
137	2611	Pulp mills	43	77
138	2621	Paper mills	44	78
139	2631	Paperboard mills	45	79
140	2652	Set-up paperboard boxes	46	81
141	2653	Corrugated and solid fiber boxes	46	81
142	2654	Fiber cans, drums, and similar product	46	81
143	2655	Sanitary food containers	46	81
144	2657	Folding paperboard boxes	46	81

Table A.3. (contd)

Sector Num.	SIC	Sector Title	FRB Capital Stock Sec.	INFORUM Sector
145	2671	Paper coated and laminated, packaging	47	82
146	2672	Paper coated and laminated, n.e.c.	47	82
147	2673	Bags: plastics, laminated, and coated	47	83
148	2674	Bags: uncoated paper and multiwall	47	83
149	2675	Die cut paper and board	47	82
150	2676	Sanitary paper products	47	85
151	2677	Envelopes	47	83
152	2678	Stationary products	47	83
153	2679	Converted paper products, n.e.c.	47	84
154	2711	Newspapers	48	86
155	2721	Periodicals	49	87
156	2731	Book publishing	50	88
157	2732	Book printing	50	88
158	2741	Miscellaneous publishing	51	89
159	2752	Commercial printing, lithographic	52	90
160	2754	Commercial printing, gravure	52	93
161	2759	Commercial printing, n.e.c.	52	93
162	2781	Manifold business forms	53	94
163	2771	Greeting cards	54	91
164	2782	Blankbooks and looseleaf binders	55	93
165	2789	Bookbinding and related work	55	93
166	2791	Typesetting	56	92
167	2796	Platemaking services	56	92
168	2812	Alkalies and chlorine	57	95
169	2813	Industrial gases	57	95
170	2816	Inorganic pigments	57	95
171	2819	Industrial inorganic chemicals, n.e.c.	57	95
172	2821	Plastics materials and resins	59	102
173	2822	Synthetic rubber	60	103
174	2823	Cellulosic manmade fibers	61	104
175	2824	Organic fibers, noncellulosic	62	105
176	2833	Medicinals and botanicals	63	106
177	2834	Pharmaceutical preparations	63	106
178	2835	Diagnostic substances	63	106
179	2836	Biological products, except diagnostic	63	106
180	2841	Soap and other detergents	64	107
181	2842	Polishes and sanitation goods	64	107
182	2843	Surface active agents	64	107
183	2844	Toilet preparations	64	108
184	2851	Paints and allied products	65	109
185	2861	Gum and wood chemicals	66	97
186	2865	Cyclic crudes and intermediates	66	96
187	2869	Industrial organic chemicals, n.e.c.	66	96
188	2873	Nitrogenous fertilizers	68	98
189	2874	Phosphatic fertilizers	69	98
190	2875	Fertilizers, mbdng only	70	98
191	2879	Agricultural chemicals, n.e.c.	71	98
192	2891	Adhesives and sealants	72	99
193	2892	Explosives	72	100
194	2893	Printing ink	72	101
195	2895	Carbon black	72	101
196	2899	Chemical preparations, n.e.c.	72	101
197	2911	Petroleum refining	73	110
198	2951	Asphalt paving mixtures and blocks	74	112
199	2952	Asphalt felts and coating	74	112
200	2992	Lubricating oils and greases	75	110
201	2999	Petroleum and coal products, n.e.c.	75	110
202	3011	Tires and inner tubes	76	113
203	3021	Rubber and plastics footwear	77	115
204	3052	Rubber and plastics hose and belting	78	116
205	3053	Gaskets, packing, and sealing devices	78	117
206	3061	Mechanical rubber goods	78	114
207	3069	Fabricated rubber products, n.e.c.	79	114
208	3081	Unsupported plastics film and sheet	80	118
209	3082	Unsupported plastics profile shapes	80	118
210	3083	Laminated plastics plate and sheet	80	118
211	3084	Plastics pipe	80	118
212	3085	Plastics bottles	80	118
213	3086	Plastics foam products	80	118
214	3087	Custom compounding of purchased resins	80	118
215	3088	Plastics plumbing fixtures	80	118
216	3089	Plastics products, n.e.c.	80	118

Table A.3. (contd)

Sector Num.	SIC	Sector Title	FRB Capital Stock Sec.	INFORUM Sector
217	3111	Leather tanning and finishing	81	119
218	3131	Footwear cut stock	82	120
219	3142	House slippers	83	121
220	3143	Men's footwear, except athletic	83	121
221	3144	Women's footwear, except athletic	83	121
222	3149	Women's footwear, except rubber, n.e.c.	83	121
223	3151	Leather gloves and mittens	84	122
224	3161	Luggage	85	122
225	3171	Women's handbags and purses	86	122
226	3172	Personal leather goods, n.e.c.	86	122
227	3189	Leather goods, n.e.c.	87	122
228	3211	Flat glass	88	123
229	3221	Glass containers	89	134
230	3229	Pressed and blown glass, n.e.c.	89	123
231	3231	Products of purchased glass	90	123
232	3241	Cement, hydraulic	91	125
233	3251	Brick and structural clay tile	92	126
234	3253	Ceramic wall and floor tile	92	126
235	3255	Clay refractories	92	126
236	3259	Structural clay products, n.e.c.	92	126
237	3261	Vitreous plumbing fixtures	93	127
238	3262	Vitreous china table and kitchenware	93	127
239	3263	Semivitreous table and kitchenware	93	127
240	3264	Porcelain electrical supplies	93	127
241	3269	Pottery products, n.e.c.	93	127
242	3271	Concrete block and brick	94	128
243	3272	Concrete products, n.e.c.	94	128
244	3273	Ready-mixed concrete	94	128
245	3274	Lime	94	129
246	3275	Gypsum products	94	130
247	3281	Cut stone and stone products	95	131
248	3291	Abrasive products	96	132
249	3292	Asbestos products	96	132
250	3295	Minerals, ground or treated	96	132
251	3296	Mineral wool	96	132
252	3297	Nonclay refractories	96	132
253	3299	Nonmetallic mineral products, n.e.c.	96	132
254	3312	Blast furnaces and steel mills	97	133
255	3313	Electrometallurgical products	97	133
256	3315	Steel wire and related products	97	133
257	3316	Cold finishing of steel shapes	97	133
258	3317	Steel pipe and tubes	97	133
259	3321	Gray and ductile iron foundries	98	134
260	3322	Malleable iron foundries	98	134
261	3324	Steel investment foundries	98	134
262	3325	Steel foundries, n.e.c.	98	134
263	3331	Primary copper	100	137
264	3334	Primary aluminum	101	138
265	3339	Primary nonferrous metals, n.e.c.	102	139
266	3341	Secondary nonferrous metals	103	137
267	3351	Copper rolling and drawing	104	140
268	3353	Aluminum sheet, plate, and foil	104	141
269	3354	Aluminum extruded products	104	141
270	3355	Aluminum rolling and drawing, n.e.c.	104	141
271	3356	Nonferrous rolling and drawing, n.e.c.	104	142
272	3357	Nonferrous wire drawing and insulating	104	142
273	3363	Aluminum die castings	105	143
274	3364	Nonferrous die castings, except aluminum	105	145
275	3365	Aluminum foundries	105	143
276	3366	Copper foundries	105	144
277	3369	Nonferrous foundries, n.e.c.	105	145
278	3398	Metal heat treating	106	136
279	3399	Primary metal products, n.e.c.	106	136
280	3411	Metal cans	107	148
281	3412	Metal barrels, drums, and pails	107	147
282	3421	Cutlery	108	157
283	3423	Hand and edge tools, n.e.c.	108	157
284	3425	Handsaws and saw blades	108	157
285	3429	Hardware, n.e.c.	108	158
286	3431	Metal sanitary ware	109	148
287	3432	Plumbing fixture fittings and trims	109	148
288	3433	Heating equipment except electric	109	149

Table A.3. (contd)

Sector Num.	SIC	Sector Title	FRB Capital INFORUM	
			Stock Sec.	Sector
289	3441	Fabricated structural metal	110	150
290	3442	Metal doors, sash, and trim	110	150
291	3443	Fabricated plate work (boiler shops)	110	151
292	3444	Sheet metal work	110	152
293	3446	Architectural metal work	110	152
294	3448	Prefabricated metal buildings	110	152
295	3449	Miscellaneous metal work	110	152
296	3451	Screw machine products	111	153
297	3452	Bolts, nuts, rivets, and washers	111	153
298	3462	Iron and steel forgings	112	135
299	3463	Nonferrous forgings	112	145
300	3465	Automotive stampings	112	154
301	3466	Crowns and closures	112	155
302	3469	Metal stampings, n.e.c.	112	156
303	3471	Plating and polishing	113	159
304	3479	Metal coating and allied services	113	159
305	3482	Small arms ammunition	114	25
306	3483	Ammunition, except for small arms, n.e.c.	114	22
307	3484	Small arms	114	24
308	3489	Ordinance and accessories, n.e.c.	114	26
309	3491	Industrial valves	115	163
310	3492	Fluid power valves and hose fittings	115	163
311	3493	Steel springs, except wire	115	162
312	3494	Valves and pipe fittings, n.e.c.	115	163
313	3495	Wire springs	115	161
314	3496	Miscellaneous fabricated wire products	115	161
315	3497	Metal foil and leaf	115	160
316	3498	Fabricated pipe and fittings	115	163
317	3499	Fabricated metal products, n.e.c.	115	164
318	3511	Turbines and turbine generator sets	116	165
319	3519	Internal combustion engines, n.e.c.	116	166
320	3523	Farm machinery and equipment	117	167
321	3524	Lawn and garden equipment	117	168
322	3531	Construction machinery	118	169
323	3532	Mining machinery	118	170
324	3533	Oil and gas field machinery	118	171
325	3534	Elevators and moving stairways	118	172
326	3535	Conveyors and conveying equipment	118	173
327	3536	Hoist, cranes, and monorails	118	173
328	3537	Industrial trucks and tractors	118	174
329	3541	Machine tools, metal cutting types	119	175
330	3542	Machine tools, metal forming types	119	176
331	3543	Industrial patterns	119	190
332	3544	Special dies, tools, jigs and fixtures	119	177
333	3545	Machine tool accessories	119	177
334	3546	Power driven handtools	119	178
335	3547	Rolling mill machinery	119	179
336	3548	Welding apparatus	119	212
337	3549	Metalworking machinery, n.e.c.	119	180
338	3552	Textile machinery	120	182
339	3553	Woodworking machinery	120	183
340	3554	Paper industries machinery	120	184
341	3555	Printing trades machinery	120	185
342	3556	Food products machinery	120	181
343	3559	Special industry machinery, n.e.c.	120	188
344	3561	Pumps and pumping equipment	121	187
345	3562	Ball and roller bearings	121	188
346	3563	Air and gas compressors	121	187
347	3564	Blowers and fans	121	189
348	3565	Packaging machinery	121	191
349	3566	Speed changers, drives, and gears	121	192
350	3567	Industrial furnaces and ovens	121	193
351	3568	Power transmission equipment, n.e.c.	121	192
352	3569	General industrial machinery, n.e.c.	121	191
353	3571	Electronic computers	122	198
354	3572	Computer storage devices	122	189
355	3575	Computer terminals	122	189
356	3577	Computer peripheral equipment, n.e.c.	122	189
357	3578	Calculating and accounting machines	122	200
358	3579	Office machines, n.e.c.	122	201
359	3581	Automatic vending machines	123	202
360	3582	Commercial laundry equipment	123	203

Table A.3. (contd)

Sector Num.	SIC	Sector Title	FRB Capital Stock Sec.	INFORUM Sector
361	3585	Refrigeration and heating equipment	123	204
362	3586	Measuring and dispensing pumps	123	205
363	3589	Service industry machinery, n.e.c.	123	206
364	3592	Carburetors, pistons, rings, and valves	124	194
365	3593	Fluid power cylinders and actuators	124	195
366	3594	Fluid power pumps and motors	124	195
367	3596	Scales and balances, except laboratory	124	196
368	3599	Industrial machinery, n.e.c.	124	187
369	3612	Transformers, except electronic	125	208
370	3613	Switchgear and switchboard apparatus	125	209
371	3621	Motors and generators	126	210
372	3624	Carbon and graphite products	126	213
373	3625	Relays and industrial controls	126	211
374	3629	Electrical industrial apparatus, nec	126	213
375	3631	Household cooking equipment	127	214
376	3632	Household refrigerators and freezers	127	214
377	3633	Household laundry equipment	127	214
378	3634	Electric housewares and fans	127	215
379	3635	Household vacuum cleaners	127	215
380	3639	Household appliances, n.e.c.	127	215
381	3641	Electric lamp bulbs and tubes	128	216
382	3643	Current-carrying wiring devices	128	216
383	3644	Noncurrent-carrying wiring devices	128	216
384	3645	Residential lighting fixtures	128	216
385	3646	Commercial lighting fixtures	128	216
386	3647	Vehicular lighting equipment	128	216
387	3648	Lighting equipment, n.e.c.	128	216
388	3651	Household audio and video equipment	129	217
389	3652	Pre-recorded records and tapes	129	218
390	3661	Telephone and telegraph apparatus	130	219
391	3662	Radio and television communication equip.	130	220
392	3663	Communications equipment, n.e.c.	130	220
393	3671	Electron tubes	132	221
394	3672	Printed circuit boards	133	223
395	3674	Semiconductors and related devices	134	222
396	3675	Electronic capacitors	135	223
397	3676	Electronic resistors	136	223
398	3677	Electronic coils and transformers	137	223
399	3678	Electronic connectors	138	223
400	3679	Electronic components, n.e.c.	139	223
401	3691	Storage batteries	140	224
402	3692	Primary batteries, dry and wet	140	225
403	3694	Engine electrical equipment	140	228
404	3695	Magnetic and optical recording media	140	229
405	3699	Electrical equipment and supplies, n.e.c.	140	230
406	3711	Motor vehicles and car bodies	142	233
407	3713	Truck and bus bodies	143	231
408	3714	Motor vehicle parts and accessories	144	234
409	3715	Truck trailers	145	232
410	3716	Motor homes	146	244
411	3721	Aircraft	147	235
412	3724	Aircraft engines and engine parts	147	236
413	3728	Aircraft parts and equipment, n.e.c.	147	237
414	3731	Ship building and repairing	148	238
415	3732	Boat building and repairing	148	239
416	3743	Railroad equipment	149	240
417	3751	Motorcycles, bicycles, and parts	150	241
418	3761	Guided missiles and space vehicles	151	21
419	3764	Space propulsion units and parts	151	236
420	3769	Space vehicle equipment, n.e.c.	151	237
421	3792	Travel trailers and campers	152	242
422	3795	Tanks and tank components	152	23
423	3799	Transportation equipment, n.e.c.	152	245
424	3812	Search and navigation equipment	153	246
425	3821	Laboratory apparatus and furniture	154	247
426	3822	Environmental controls	154	248
427	3823	Process control instruments	154	248
428	3824	Fluid meters and counting devices	154	248
429	3825	Instruments to measure electricity	154	248
430	3826	Analytical instruments	154	253
431	3827	Optical instruments and lenses	154	253
432	3829	Measuring and controlling devices, n.e.c.	154	248

Table A.3. (contd)

Sector Num.	SIC	Sector Title	FRB Capital	INFORUM
			Stock Sec.	Sector
433	3841	Surgical and medical instruments	155	249
434	3842	Surgical appliances and supplies	155	250
435	3843	Dental equipment and supplies	155	251
436	3844	X ray apparatus and tubes	155	230
437	3845	Electromedical equipment	155	230
438	3851	Ophthalmic goods	156	254
439	3861	Photographic equipment and supplies	157	255
440	3873	Watches, clocks, watchcases, and parts	158	252
441	3911	Jewelry, precious metal	159	256
442	3914	Silverware and plated ware	159	256
443	3915	Jewelers' materials and lapidary work	159	256
444	3931	Musical instruments	160	257
445	3942	Dolls and stuffed toys	161	258
446	3944	Games, toys, and children's vehicles	161	258
447	3949	Sporting and athletic goods, n.e.c.	161	259
448	3951	Pens and mechanical pencils	162	260
449	3952	Lead pencils and art goods	162	260
450	3953	Marking devices	162	260
451	3955	Carbon paper and inked ribbons	162	260
452	3961	Costume jewelry	163	261
453	3964	Needles, pins, buttons, and fasteners	163	261
454	3991	Brooms and brushes	164	262
455	3993	Signs and advertising specialties	164	262
456	3995	Burial caskets	164	262
457	3996	Hard surface floor coverings, n.e.c.	164	262
458	3999	Manufacturing industries, n.e.c.	164	262

Appendix B

Statistical Analysis of Capacity Utilization and Potentially Longer Workweeks

Appendix B

Statistical Analysis of Capacity Utilization and Potentially Longer Workweeks

This appendix describes some statistical analysis of the capacity utilization rates and hours worked data available in the 1990, 1992, and 1994 Surveys of Plant Capacity. On the basis of this work, we conclude that the use of "shift factors" of the sort used in the 1991 PNNL study should be used with caution.

B.1 Derivation of Weekly Hours

The 1990, 1992, and 1994 SPCs collected information on the number of days per week and plant hours of operation per day. This unpublished information was made available by the Bureau of Census for use in this study.

The hours data from the 1992 and 1994 SPC were straightforward. The Bureau of the Census calculated an average days per week and hours per day at the 4-digit SIC basis. The industry averages were based upon weighting each observation by the plant's sampling weight. Sampling weights were related to the value of shipments from the Annual Survey of Manufactures.

The hours data from the Census Bureau pertaining to the 1990 SPC were not supplied in this fashion. Rather, the number of establishments for various days-per-week intervals (5, 6 or 7) and hours-per-day (0-8, 9-16, over 16) were tabulated. These data were converted into weekly hours by averaging of the data, using the number of establishments as weights. We assumed that plants reporting 0-8 hours worked 8 hours, those reporting 9-16 hours worked 16 hours, and those reporting over 16 hours worked 23 hours. As a result of these assumptions, the weekly hours calculated for 1990 may not be entirely consistent with those for 1992 and 1994. As discussed, we performed additional regression analyses to detect any biases caused by these procedures.

B.2 Regression Analysis

The key issue to be explored in the statistical analyses is to what extent the reported capacity utilization rates embody the potential for firms to operate additional hours during the workweek. Two specifications, using cross-sectional data, were estimated. The first specification is motivated by the shift factor concept used in the 1991 PNNL study. We examine how potential increase in production implied by the capacity utilization rate matches with the potential increase in hours. Thus, the first specification results in Equation (B.1) below:

$$1/\text{CU} = a + b 168/\text{WH} \quad (\text{B.1})$$

where

CU = capacity utilization rate reported in the SPC

WH = weekly hours worked, as described in Section B.1.

The second specification is similar, except that we fit utilization rate directly, using a weekly hours fraction as the explanatory variable. Thus, we have:

$$\text{CU} = a + b \text{WH}/168 \quad (\text{B.2})$$

The first row of Table B.1 examines the 1994 SPC data for emergency capacity utilization and weekly operating hours. The results in the row show how the inverse of capacity utilization is related to a naive shift factor (using all 168 hours, rather than making some adjustment for required downtime), as indicated in Equation (B.1). Although the b coefficient is not 1.0, it is clear that the

Table B.1. Regression Results for Utilization--Hours Worked, Equation (B.1)

Data Set No.	CU Variable	Hours Variable	No. of Obs.	a coef (T-stat)	b coef (T-stat)	R ²
(1)	1994 SPC Emer CU	1994 SPC	440	0.978 (21.2)	0.278 (15.7)	0.36
(2)	1994 SPC Full Prod CU	1994 SPC	440	1.14 (54.9)	0.050 (6.3)	0.08
(3)	1992 SPC Emer CU	1992 SPC	454	1.11 (24.4)	0.224 (13.2)	0.28
(4)	1992 SPC Full Prod CU	1992 SPC	454	1.18 (44.2)	0.052 (5.2)	0.06
(5)	1990 SPC Emer CU	1990 SPC	383	1.16 (23.5)	0.183 (6.5)	0.10
(6)	1992 SPC Emer CU	1990 SPC	383	0.92 (14.6)	0.430 (11.9)	0.27
(7)	1990 SPC Emer CU	1992 SPC	454	1.27 (35.9)	0.079 (6.0)	0.07

reported emergency capacity utilization rates are strongly related--in a cross-sectional sense--to the potential for longer workweeks. Refinements of this specification might remove those industries that are continuous process. This and other more careful sample construction procedures might yield higher estimates of the b coefficient. Row (3) in the table shows similar results with the 1992 SPC.

It is constructive to compare this result with similar regression using the "full production" measure of capacity utilization that is also reported in the SPC. The full production capability is defined in the SPC as "the maximum level of production that this establishment could reasonably expect to attain under normal operating conditions." Survey respondents are instructed to "not assume the number of shifts and hours of plant operations to be higher than that attained by your plant any time during the past 5 years."

The statistical results strongly reflect the operational characteristics that are to be assumed when estimating "full production." Row (2) shows the results when the full production utilization is substituted for the emergency utilization rate for the same set of industries in the 1994 SPC data. As the R^2 indicates, the potential for more operating hours during the week is only weakly related to the full production utilization rate across the sample of 4-digit SIC industries. This weak relationship was also apparent in the 1992 data, as shown in Row (4) of the table.

Rows (5) through (7) of Table B.1 give an indication of the effect of the modifications in the SPC that were made between 1990 and 1992 with regard to the concept of emergency. As discussed in Section 2.1, more emphasis was placed upon the potential for multiple shifts beginning with the 1992 SPC. Row (5) in the table uses the 383 industries for which weekly hours could be estimated from the 1990 SPC. Clearly, the statistical relationship of utilization rates and potentially longer work weeks is much lower in this data set as compared to the 1992 data set (Row 5). Although the b coefficient is only about 25% smaller, the statistical significance in terms of its t-value and the overall R^2 of the equation is much lower.

One may speculate that the construction of the weekly hours variable may be partially responsible for this result. To examine this issue, we estimated several additional regressions. These regressions are motivated by the idea that cross-sectionally the number of hours worked in 1990 would be highly correlated with those in 1992. Under this assumption, we first examine the relationship of the calculated hours from the 1990 SPC with the utilization rates from the 1992 SPC. Now, as seen in Row 6, the strength of the relationship is on a par with the results using solely 1992 data. Thus, it clearly appears that respondents of the 1992 SPC did respond markedly to the more explicit instructions to consider longer work weeks.

Row (7) shows the results of reversing the logic behind the results shown in row (4). Here we use the hours from the 1992 survey (with a greater numbers of industries represented) along with the utilization rates from the 1990 SPC. Again, we corroborate the above results--the overall regression fit is markedly worse than that using the utilization rates from the 1992 survey.

The qualitative results with Equation (B.2), with capacity utilization as the dependent variable--were similar to those of Equation (B.1) and are not reported here. The results again indicate a strong linkage between capacity utilization and the percentage of total weekly hours worked. The effect was considerably stronger for the 1992 and 1994 SPC emergency utilization rates:

In summary, the statistical evidence points to a much greater recognition on the part of survey respondents--especially in the 1992 SPC questionnaire--to take account of additional shifts and longer workweeks in their assessment of emergency capacity. Of course, this cursory statistical analysis cannot reveal whether an absolute maximum production level was considered in the majority of cases. Nevertheless, the results suggest to us that incorporating explicit shift factors on top of a calculated implicit emergency capacity level would be inappropriate and might cause the resulting estimates to be biased too high. Accordingly, until further evidence or analysis is available, the SPC emergency utilization are judged the best point estimate of true emergency capacity for the time period in question. Nevertheless, as discussed in Section 4, we have included a separate factor based upon the weekly hours information in the fourth quarter of 1994 that can be used to estimate an optional upper bound to the emergency capacity estimates.

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