

Did The Productivity Revival Spill Over
from Manufacturing to Services?
Conflicting Evidence from Four Data Sources*

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ABSTRACT

Alternative data series produced by the BEA and BLS provide divergent interpretations of the post-1995 revival of productivity growth in the U. S. economy. While there is a consensus that the "New Economy" (NE) portion of durable manufacturing that produces computers, semiconductors, and other electronic computers was the center of the revival, otherwise the ranking of industries differs sharply among those enjoying strong, weak, or negative growth revivals. The most interesting issue involves the non-NE portion of the manufacturing sector, about four-fifths of the manufacturing sector, where there was either a revival or a retrogression, depending on which data source is used.

The two most important data sources examined are those produced by the Bureau of Economic Analysis (BEA) for "Gross Product Originating" (GPO, or value added) and "Gross Output" (GO, or GPO plus intermediate input). Also compared are the BLS quarterly productivity data that are much more timely than the other sources but do not provide detailed industry coverage, and the BLS annual industry data that are published for individual industries in much more detail than the BEA sources but cover only about half of the private economy.

The BEA's GPO data have been the primary source used in previous studies of the post-1995 productivity growth revival. They locate all of the revival in 1995-99 from 1972-95 in six industries, two that produce NE manufactured goods, wholesale trade, retail trade, and two components of the financial sector. The BEA's GO data distribute the post-1995 revival much more evenly and broadly across industries, with fewer heroes and fewer goats. The two sources of BLS data, both the aggregate quarterly source and the disaggregated annual data published at the sub-industry level, agree more with the BEA GO than the BEA GPO data. The quarterly data show much stronger performance in non-NE manufacturing and a weaker performance in nonmanufacturing. The industry data generally display a smaller post-1995 revival than the comparable BEA GO data.

The preferred data source, the BEA GO data, raises important questions about the post-1995 revival. Rather than being centered in a few industries, the revival is widely distributed. There is no apparent relationship between those industries that are most computer-intensive and those that had the most rapid post-1995 revivals. The paper leaves the ultimate explanation open for further research. Perhaps the post-1995 revival across such a wide span of industries reflected some as-yet unidentified factor having little relation to the New Economy and computer use, or perhaps such a widespread revival is consistent with the hypothesis that much of the post-1995 revival reflected unsustainably rapid growth in the U. S. economy that may not continue.

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I. Introduction

The recorded annals of U. S. productivity growth since the late nineteenth century have been marked by several notable turning points. A marked acceleration distinguished the post-World War I half-century from the four decades prior to World War I and was one of the most important features of the historical record noted by Solomon Fabricant in his introduction to Kendrick's pathbreaking 1961 volume that for the first time set out the historical record in annual data.¹ It took much less time for the post-1972 productivity growth slowdown to be recognized, and indeed it was analyzed by William Nordhaus (1972) just as it was beginning by today's standard chronology.² The post-1995 productivity growth revival was pre-announced by the perceptive economics staff of *Business Week* just as it was commencing,³ but several years elapsed before it was recognized by academic economists.⁴

1. "The change in trend that came after World War I is one of the most interesting facts before us. There is little question about it . . . Some readers of the charts might prefer to see in them not a sharp alteration of trend, but rather a gradual speeding up of the rate of growth over the period as a whole. The latter reading is not entirely out of the question, but it seems to fit the facts less well than the former" (Solomon Fabricant, p. xliii in the introduction to Kendrick, 1961).

2. Nordhaus (1972) examined the slowdown that occurred in the late 1960s relative to the preceding portion of the postwar era. Ironically, in the BEA (GPO) data examined in this paper, there is no such slowdown — subsequent revisions have made growth in nonfarm private business output per hour faster in 1967-72 than in 1948-67, namely 2.79 vs. 2.35 percent per year. As we shall see below, current estimates of productivity growth from 1948 to 1972 vary from 2.5 percent to above 3.3 percent per year, depending on whether BLS or BEA is the source, and on whether the farm and/or real estate sectors are included, and evidence on a post-1967 slowdown also varies along the same dimensions.

3. See the cover banner in *Business Week*, October 9, 1995, "Productivity to the Rescue."

4. Academic economists presenting papers at the Chicago AEA meetings in January, 1998, including Gordon (1998) were still trying to explain the slowdown and the "Solow paradox" (1987), with no hint that a revival had begun. By June, 1999, I began my attempt to decompose the revival into its trend and cyclical components (Gordon, 1999) — so I would date the academic recognition that a revival had occurred as happening sometime between those two dates. Nordhaus (2001, Figure 1) displays a three-year moving average of BLS quarterly productivity growth that does not reveal a movement above the temporary 1992 growth peak until early 1999.

In contrast to the generally inconclusive academic analysis of the post-1972 slowdown over the past 25 years, a consensus has already emerged about the most important underlying causes of the post-1995 revival. Thanks to the independent but complementary work of Stephen Oliner and Daniel Sichel (2000) and Dale Jorgenson and Kevin Stiroh (2000), almost everyone agrees that a central role in the revival was played by an acceleration of investment in information technology (IT) equipment and software in general and computer hardware in particular, and that this was due in turn to an acceleration of technological change in the production of IT equipment. According to the most recent estimates by Oliner and Sichel (2001), of the post-1995 revival in the growth rate of output per hour in the nonfarm U. S. business economy (that is, 1995-2000 compared with 1973-95), which they estimate to be roughly 1.5 percentage points, fully 0.9 points can be attributed to an acceleration in the growth of investment in computers and computer-related semiconductors. Of this, 0.3 points is attributed to the effect on multifactor productivity (MFP) growth contributed by faster growth in the *production* of computers, and the remaining 0.6 points is the effect of faster growth in computer investment through the *use* of computers, the so-called "capital-deepening" effect that causes growth in output per hour to proceed more rapidly than that of MFP.

What explains the remaining portion of the 1.5 percentage-point revival in output per hour growth, once we subtract out the 0.9 points that Oliner-Sichel attribute to the production and use of computers? Here there is much less of a consensus. While fully accepting Oliner and Sichel's numbers for the contribution of computers, I have attributed

as much as 0.5 points of the remaining acceleration to a temporary cyclical effect, based on the traditional positive correlation between deviations of output growth above trend and of productivity growth above trend that is evident in U. S. quarterly data going back to the mid-1950s.⁵ The sharp response of productivity growth to slower output growth, with a deceleration of the growth rate of output per hour in the BLS quarterly data, from 6.3 percent in 2000:Q2 to -1.3 percent in 2001:Q1, seems consistent with a significant cyclical effect, but it will take another year or more to reach a retrospective assessment concerning the fraction of the 1995-2000 productivity growth acceleration that was cyclical.

Since each evolving quarter of data shifted the division between the trend and cyclical components of the post-1995 productivity growth revival, both up and down, it is not surprising that most analysts interested in its decomposition ignored the cyclical component and decomposed the actual data as if they all represented an acceleration in the productivity trend. Most of these analysts qualified their findings, in the sense that the residual acceleration in MFP growth outside of the computer sector might contain some cyclical component, and the usual approach was to avoid quantitative guesstimates and to remain agnostic about the cyclical element. A sharp exception is the paper by Martin Baily and Robert Lawrence (2001), who took a very strong view that "almost none" of the revival was cyclical; correspondingly, the Baily-Lawrence paper finds the strongest evidence of a revival in MFP growth that goes far beyond the direct and indirect contribution of computer

5. The initial analysis was presented in Gordon (1999). The figure of 0.5 comes from Gordon (2000, Table 2, column 1, line 2, p. 55). In speeches and presentations given in the spring of 2001, I have shaved that 0.5 point estimate down to the 0.3 points which is explicit in the January, 2001 projections of the Congressional Budget Office (2001, pp. 32-35).

investment.⁶

In addition to the debate over the existence and size of a cyclical effect, analysts have differed over the industrial location of the productivity revival, i.e., how much has occurred in the manufacturing sector outside of computer production and how much in the rest of the economy outside of manufacturing. In my own analysis (Gordon, 2000, Table 2) the revival is located almost entirely in computers and the rest of durable manufacturing, with next to nothing left over to indicate a structural revival in MFP in the rest of the economy. In contrast Baily-Lawrence and Nordhaus (2001) find a substantial structural acceleration in productivity growth outside of manufacturing, especially in financial services and both retail and wholesale trade. These differing verdicts regarding the industrial location of the productivity growth revival are of more than passing academic interest. The greater the extent to which the post-1995 revival resulted from the post-1995 near-doubling in the growth rate of computer hardware and software investment, the more fragile is the outlook for economywide productivity growth in light of the collapse of growth in hardware and software investment that has occurred since mid-2000.⁷ In contrast, the more the revival has occurred in industries outside of computer manufacturing and software production, the greater is the chance that the post-1995 revival will continue rather than being a five-year flash in the pan.

Some of the difference between Baily-Lawrence, Nordhaus, and myself concerns the

6. "How much of this *acceleration* was cyclical? Almost none." (Baily-Lawrence, 2001, p. 1).

7. The annual growth rate of real investment in computers, peripherals, and software was 15.4 percent for 1987-95, 28.3 percent for 1995-2000:Q3, and 2.7 percent for 2000:Q3-2001:Q1.

cyclical effect. In the game of "peeling the productivity revival onion" by slicing off a computer contribution and a cyclical effect, the smaller is the cyclical slice, the larger is the residual representing the structural MFP revival outside of computers. Subtracting no cyclical component at all maximizes the portion of the revival located outside of computer and software production. But another significant component of the difference between these studies rests in the source of the data. My previous work was based entirely on the BLS quarterly series on output per hour in the nonfarm private business, manufacturing durable and nondurable, and residual sectors — this data source is released with only a one-month lag after the end of each quarter, and the use of quarterly rather than annual data is essential in any attempt to estimate a cyclical component of productivity change. In contrast Baily-Lawrence and Nordhaus use annual BEA data on Gross Product Originating (GPO, i.e., value-added) which provides a much richer decomposition into 83 industrial sectors and allows the productivity revival to be traced with a much finer grain, albeit only through 1999 rather than the most recent quarter.

This choice of different data sources turns out to be very important for the diagnosis of the productivity growth revival. As a simplistic summary, the BEA GPO data exhibit a much weaker performance of productivity growth in non-computer manufacturing, both in non-computer durables and in manufacturing nondurables, than in the BLS quarterly data. There is a correspondingly stronger performance of productivity growth outside of manufacturing, and much of this occurs in trade and financial services. Baily-Lawrence emphasize the strong performance of trade and financial services without decomposing

manufacturing into the robust performance of "new economy" (NE) manufacturing and the extremely weak performance of the rest of manufacturing. Nordhaus does strip out NE manufacturing and comments in passing on the weak performance of non-NE manufacturing, which he attributes largely to the food sector.⁸

Plan of the Paper

Was non-NE manufacturing a strong component of the productivity revival or the sick man of the economy? Were retail trade, wholesale trade, and financial services correspondingly weaker in alternative data sources which make manufacturing look better? This paper examines the industrial composition of the post-1995 productivity revival in four data sources, two from the BEA and two from the BLS.

We begin with the BLS quarterly series, available only for private nonfarm, durables, nondurables, and the residual, and compare its behavior back to 1948 for those sectors with the BEA GPO data. While the BEA only publishes GPO back to 1977, because of major methodological changes introduced then, we can link BEA GPO by industry at 1977 to the old GPO series that were previously published as part of the NIPA (see Appendix A). Then we examine the behavior of the GPO series themselves for all published industries, highlighting those industries that had particularly strong post-1995 revivals and contrasting the industry ranking of revival performance with the corresponding ranking of industry performance in the 1972-95 slowdown period.

8. See Nordhaus (2001, p. 20 and Figure 15). The phrases NE manufacturing and non-NE manufacturing are borrowed from Nordhaus, where the NE component consists of "Industrial machinery and equipment" and "Electronic and other electric equipment," BEA line numbers 19 and 20.

In addition to publishing GPO by industry since 1977, the BEA also publishes Gross Output (GO) and intermediate materials inputs (IM) for the same industries since 1987. In addition, the BLS industry productivity program publishes productivity data for a large number of disaggregated industry sectors based on the GO rather than GPO concept of output. While more disaggregated than the BEA industry breakdown, the coverage of the BLS data is much more spotty, being concentrated primarily in mining, manufacturing, transportation, and retail trade. For industries with overlapping coverage, we can compare the performance of individual industries in the post-1995 revival between the BEA GO and BLS measures of productivity. For all industries we can also compare the two BEA measures of productivity based on the GO and GPO concepts of output, and differences between growth rates of the GO and GPO productivity measures can be further traced to changes in the ratio of nominal IM to GO and of changes in the relative prices of IM and GO.

The primary task of this paper, a preliminary effort, is to identify differences among these data sources, in particular the poor showing of non-NE manufacturing in the BEA GPO data. We point to particular cross-data differences that are related to movements in IM quantities and prices. A serious attempt to go beyond mere identification to serious analysis would require a much more extensive effort to get down in the data trenches on an industry-by-industry basis and would require a book-length project rather than a mere workshop paper.

Two important disclaimers are offered as the last words of this introduction. First, every reference to "productivity" in the remainder of this paper refers to average labor

productivity, that is, output per hour, and not to "multi-factor productivity" (MFP). Data on capital input would add an extra level of complexity to a paper that is already heavy on data. Second, the paper is focussed almost entirely on the sources of differences in output per hour without any attempt to decompose those into the separate behavior of output and hours. Thus we compute BEA output per hour for both the GO and GPO measures of output using the same BEA measures of hours, and we examine published BLS output per hour for individual industries using BLS measures of hours, without examining separately any differences in behavior between BEA and BLS measures of hours.

II. The Long View: BLS Quarterly vs. BEA GPO

Our first comparison of productivity growth from alternative data sources is between the BLS quarterly series and BEA GPO. Recall that BEA GPO is only published back to 1977, so to conduct this comparison we must ratio-link post-1977 real GPO to the pre-1977 real GPO data based on a different methodology.⁹ Fortunately, it is possible to adjust for the fact that the BLS measures have been revised back to 1948 but the BEA industry productivity measures have not. By adding to the "old" (1986 NIPA) BEA growth rates the difference between the current and old BEA growth rates of Private nonfarm nonhousing output for 1948-72 and 1972-77, we can adjust the BEA growth rates to be consistent with current data on GDP growth before 1977. Without any revised BEA data on the industrial composition of output prior to 1977, we simply apply the revision "add-ons" equally to all

9. The sources of our pre-1977 BEA data on GPO are described in Appendix A.

the BEA industries.¹⁰

With this adjustment, Table 1 displays annual average growth rates for three periods — 1948-72, 1972-95, and 1995-99. The top third of the table displays the BLS series, the middle section the revision-adjusted BEA series, and the bottom section displays the difference between the BLS and BEA growth rates. The BLS data refer to the private nonfarm business (PNFB) sector and exclude government, agriculture, housing, and household services. Likewise the BEA data exclude government, agriculture, real estate, and household services. In each section the line labelled "residual" refers to the private nonfarm business sector excluding manufacturing.

For 1948-72 and 1972-95 the BLS growth rates exceed the BEA growth rates for PNFB, and this is more than accounted for by the residual sector, with a roughly equal negative difference for manufacturing in the first two periods. When I was a young economics student, I learned that U. S. productivity growth proceeded at an average of 3.2 percent per year, the specific number that was embedded in the Kennedy Administration's wage-price guideposts. How can we reconcile the lower productivity growth rates for PNFB in Table 1 with the perception in the 1960s that productivity growth was proceeding at 3.2 percent? The answer comes not just from the differences registered by the BLS vs. BEA productivity measures displayed in Table 1 but also in the "inclusive" definition of private

10. The add-ons for the 1986 NIPA growth rates are 0.41 percent per annum for 1948-72, 0.56 percent for 1972-77, and zero after 1977. This yields an add-on factor of 0.12 percent for 1972-95. The add-on factors relevant to Nordhaus' (1972) hypothesis of a slowdown in the late 1960s are 0.34 points for 1948-67 and 0.70 points for 1967-72. The 1986 NIPA publication (Table 1.8) used for the "old" estimates of Private nonfarm nonhousing output is cited in Appendix A; the "new" estimates are those in the current NIPA as given in the *Economic Report of the President*, January 2001, Table B-11.

sector productivity (including farm, housing, and personal services) and the "exclusive" definition excluding those sectors. The in-text table provided here shows the difference between the "inclusive" and "exclusive" definitions. This distribution involves only the subtraction of the farm sector for BLS (since the BLS does not publish measures that include housing or personal services) but for BEA involves the subtraction of the farm, real estate, and personal service sectors:

	<u>Inclusive</u>	<u>Exclusive</u>
BLS		
1948-67	3.39	2.92
1967-72	2.62	2.42
BEA		
1948-67	2.74	2.35
1967-72	2.47	2.79

Thus Nordhaus' (1972) investigation of the productivity slowdown of the late 1960s was appropriate for both sets of BLS data and for the "inclusive" version of the BEA data. These differences reflect the fact that both the farming and real estate sectors had productivity growth rates for 1948-67 that were well above the average for the rest of the PNFB sector.¹¹

Turning to the post-1995 recovery in productivity growth, the BEA and BLS data have exactly the same 1995-99 growth rate for PNFB, but the BEA recovery (1.20 points) is larger than the BLS recovery (1.01 points) due to differences for the 1972-95 slowdown

11. The BEA numbers discussed here add 0.34 percent per year for 1948-67 and 0.70 percent per year for 1967-72 to reflect revisions in the growth rate of Private nonfarm nonhousing output in the current NIPA compared to the 1986 NIPA publication used to calculate the pre-1977 growth rates of output per hour by industry.

interval. However, by far the most important contrast is the varying allocation of the revival between manufacturing and non-manufacturing, with the BLS registering a 0.90 point larger recovery in manufacturing and 2.28 point larger nondurable manufacturing recovery than the BEA, while the BEA registers a 0.61 point faster recovery in nonmanufacturing. These data differences clearly help to explain why some of my conclusions in previous work, based on BLS data, vary from those of Baily-Lawrence and Nordhaus, based on BEA data for GPO.¹² The large difference in growth rates for nondurable manufacturing is particularly interesting and we shall attempt below to determine how much of it is due to divergent trends of the quantities and prices in such materials-intensive nondurable manufacturing industries as food, petroleum refining, leather, tobacco, and textiles.

III. The Heroes and Goats of the GPO Productivity Revival

Now we can proceed to examine the dimensions of the post-1995 productivity growth revival in the BEA GPO data. Here everything is as published by the BEA, with the exception that the BEA publishes hours only for major "one-digit" industries (e.g., durable manufacturing) but not for "two-digit" industries within those major industries, e.g., industrial machinery. However, since the BEA publishes employment (persons engaged) for all industries, it is simple and innocuous to assume that the growth rate of hours per person

12. The time periods are also different. I compared 1972-95 vs. 1995-99. Baily-Lawrence limit their comparisons to 1989-95 vs. 1995-99. Nordhaus examines three periods: 1977-89, 1989-95, and 1995-98 (Nordhaus' paper was completed before the release of the BEA data for 1999). Productivity growth differed sufficiently in the Baily-Lawrence comparison period (1989-95) vs. my longer (1972-95) period to create differences in the overall magnitude of the post-1995 revival and the ranking of different industries in contributing to that revival. Compare Tables 2 and 5 below.

engaged are identical within each sub-industry inside the major industries. With that qualification, everything presented in this section is as published by the BEA back to 1977, and linked before that to the 1986 version of the NIPA.¹³

Table 2 lists in the top section the major aggregations of the BEA GPO productivity data, including versions stripped of various sub-industries that did particularly well or badly in the post-1995 period. Then in the subsequent section the industries are listed in order of BEA line number, #1-#82.¹⁴ There are several interesting findings displayed in the top section of Table 2. The revival is strongest, as expected, for durable manufacturing, but this is entirely due to the "New-Economy Manufacturing" sector (BEA lines 19-20), i.e., "NEM." Without the contribution of NEM, durable manufacturing had no recovery at all, but rather a -0.47 percentage point retardation, and its rate of productivity growth in 1995-99 was a pathetic 0.80 percent per year. By contrast Gordon (2000, Table 2) found from a mix of BLS and BEA data that there was a substantial post-1995 revival in non-computer durable manufacturing.¹⁵

Other notable aspects of the top section of Table 2 include the negative revival, i.e.,

13. In Tables 2 and 3 a slight upward addition of 0.12 percentage points per year is made for all industries in the 1972-95 period. This is the same adjustment as is made in Table 1, as explained above.

14. Real Estate and Private Household Services are excluded from all the industry lists in tables from Table 2 onward.

15. Part of the difference is that Gordon (2000) subtracted out a smaller portion of durables, so part of what he termed non-computer durables includes other types of new-economy manufacturing (NEM). The sector stripped out by Gordon (2000), NIPA real final sales per hour of computers and peripherals, accounts for only 1.2 percent of private nonfarm nonhousing GDP in 1996, whereas the "NEM" sector stripped out in Table 2 (BEA lines 19 and 20) accounts for a much larger 4.9 percent of private nonfarm nonhousing GDP in 1996.

retardation, in nondurable manufacturing (also shown in Table 1 in contrast to the positive revival in BLS data). Because nondurable manufacturing performed so poorly in the BEA data, the post-1995 revival is actually stronger outside of manufacturing (1.31 points) than in the entire PNFB economy (1.22 points).¹⁶ However, more than half of the PNFB revival can be attributed to four BEA sub-industries, the two NEM industries (lines 19-20), securities and commodities brokers (line 54), and "Holding, other investment offices" (line 60), comprising just 6.8 percent of 1996 GPO in the PNFB sector. Excluding those four sectors from PNFB (Table 2, line 9) reduces the revival from 1.22 points to 0.46 points, a reduction of 0.76 points. Of this, 0.40 is attributable to NEM and the remaining 0.34 to the two financial sectors. Taking out the trade sector, as on line 12, converts the revival into a retrogression, i.e., the trade sector accounts for 0.59 points of the revival (Table 2, line 9 minus line 12).

All the sub-industries published by the BEA are displayed in the bottom section of Table 2, listed by BEA line number. An easy way to identify those industries that performed well or badly is to rank the industries by the value of the post-1995 recovery, as is done in Table 3. Also shown is the magnitude and rank of the industry in its productivity slowdown (1972-95 compared with 1948-72), and its share in 1996 private GPO.¹⁷ The most important industries that contributed to the revival, other than the two NEM sectors and

16. Henceforth "PNFB" is shorthand for the private sector net of agriculture, real estate, and personal services.

17. Since the government sectors are included in the list, the sum of the weights for total GDP is 115 percent, not 100 percent. Also, the add-on factor of 0.12 percent per year is added to all industries for 1972-95, as in Table 2.

the two financial sectors identified above, are wholesale trade, retail trade, and mining. Important sub-industries that had above-average revivals include primary metals, oil and gas extraction, petroleum and coal products, air transportation, legal services, other services, insurance carriers, other transportation equipment, and utilities. The most important sub-industries that had negative revivals of more than one percent per annum were trucking, hotels, instruments, communications, fabricated metals, educational services, social services, lumber, textiles, nondepository institutions, and food.¹⁸

A natural question is whether the ranking of industries by the magnitude of the post-1995 productivity growth revival has any relationship to the rank of the same industries by the magnitude of the post-1972 productivity growth slowdown, i.e., was there a "bounceback" by industries which performed poorly during 1972-95? Scanning the top-ranked revival industries, it appears that the answer is "yes and no." For instance, "Holding, other investment offices" was top ranked for its revival and second ranked for its slowdown, and pipelines were ranked third and first, respectively. But for other top-ranked revival industries, e.g., NEM manufacturing (BEA #19-20), metal mining, and coal mining, there was no slowdown at all, and these industries were ranked near the bottom for the magnitude of the slowdown. Simply running a regression of the revival rank on the slowdown rank, the regression coefficient is 0.0006 with an insignificant t-ratio of 0.003, indicating absolutely no relation between the revival and the slowdown.

18. Nordhaus (2001) identified the food sub-industry as responsible for much of the poor performance of nondurable manufacturing. We return to this issue below when examining the contrast between BEA GPO and gross output data.

IV. Gross Output Measures of Productivity, BEA vs. BLS

Previous studies of the industry breakdown of the productivity growth revival have been limited to the use of the BEA GPO data examined in Tables 1, 2, and 3 above. However, there are two other sources of industry-level productivity data that may help to provide additional information. For the period since 1987 the BEA publishes not just GPO (i.e., value-added), but also gross output (GO) and intermediate materials (IM), including nominal and real values and the appropriate deflators. Productivity measures can be created by dividing BEA real GO by the same measures of hours as are used in Tables 1-3 to develop BEA output per hour series based on the alternative GPO concept of output. However, prior to our examination of differences in BEA productivity data based on GPO vs. GO, we can introduce another set of industry productivity measures based on the gross output rather than value-added concept, and these are published annually by the BLS Division of Industry Productivity Studies.

Scattered previous studies have compared BEA and BLS measures of productivity at the level of individual industries and have provided a detailed analysis of the sources of differences, e.g., for transportation such comparisons have been made by Gordon (1992) and more recently by Bosworth (2001).¹⁹ However the BLS does not publish any type of aggregation of its measures of sub-industry productivity into categories comparable to the BEA line items displayed in Table 2. For instance, the BLS publishes separate measures of

19. Yuskavage (2001) studies differences between BEA GO, GPO, and IM series for each sub-industry within the transportation sector but makes no comparisons with BLS data.

productivity for hardware stores, food stores, and 15 other categories of retailing, but it does not publish an aggregated productivity measure for the retail sector. In fact, the only published overlap between the BEA categories and the BLS categories are coal mining, three categories within transportation, telephone services, hotels, and auto repair. Hence it is not surprising that the only comparisons of BEA and BLS industry productivity series (of which I am aware) are for transportation.²⁰

However, it is quite easy to aggregate the BLS productivity measures for sub-industries into the BEA industry categories by using the employment weights that BLS publishes for its own industry categories. When this is done, we emerge with the data shown in Table 4, which displays the partial industry coverage of the BLS industry program.²¹ Coverage is excellent for mining, manufacturing, transportation, and retailing, spotty for communications, finance, and services, and nonexistent for agriculture, construction, public utilities, and wholesale trade. To adjust for incomplete coverage and maintain comparability, all aggregates for BEA GO productivity measures in the first two columns of Table 4 are computed applying positive weights only for those industries covered by the BLS measures. For instance, the first line titled "Private Industries" applies a zero weight to BEA productivity measures in such sectors as construction and wholesale trade which are not covered by the BLS data.

20. Bosworth (2001) compares — for the period 1977-99 — BLS measures of output and employment for railroads, trucking, and airlines, with BEA measures of GO, GPO, IM, and employment for these three industries.

21. The details of the aggregation to BEA categories, using BLS employment weights, are shown in Appendix B.

For the covered portions of the PNFB economy, the post-1995 productivity growth revival is considerably less impressive than in the BEA GO data (recall that we are now comparing 1995-99 with 1987-95, not the longer interval 1972-95 used for comparisons in Tables 1-3). The revival is 0.99 points for BEA and 0.60 points for BLS in the PNFB economy, 2.48 vs. 1.50 points in manufacturing, 2.84 vs. 2.21 in durable manufacturing, 2.07 vs. 0.65 in nondurable manufacturing, 1.98 vs. 0.54 in communications, and 2.33 vs. 2.15 in retail trade. In transportation the measures go in the opposite direction, with the BEA registering a revival of 1.04 and the BLS a retardation of -0.82. Only in the services is the BEA less favorable than the BLS, with a retardation of -0.95 compared to a modest acceleration of 0.20. As shown in the bottom section of the table, BEA and BLS overlap in only four service industries, and in all of them (hotels, personal, auto repair, and motion pictures) the BEA shows slower post-1995 productivity growth than BLS, with gaps ranging from -0.17 for auto repair to -2.03 for hotels.

The bottom section of Table 4 lists the individual BEA categories separately and displays BLS productivity growth rates for all covered industries. Some of the differences may be due to our use of employment data to aggregate BLS sub-industry indexes into BEA categories; this could explain why BLS 1995-99 productivity growth rates in NE-manufacturing is slower than BEA. The BLS weights could understate the BLS aggregates for these industries if employment weights for the fast-growing computer, semiconductor, and other electronics categories within BEA industries 19 and 20 are smaller than the more appropriate value-added weights.

In transportation the differences are starker and harder to explain. While both BEA and BLS agree that the growth rate of trucking productivity fell after 1995 by two points or more, they disagree radically on railroads and airlines. For railroads the growth rates for 1987-95 are almost identical but are almost three percentage points apart for 1995-99. The story for airlines is the most different of all; the BEA registers a revival for airlines of fully 6.9 percentage points per annum, compared to a BLS retardation of -1.04 points per annum.²² However, over the full 1985-99 period the BEA annual rate of productivity growth is -1.90 percent per year compared to 0.68 for BLS. In his detailed examination Bosworth (2001) reveals a much faster growth rate of airline employment in the BEA data, with little difference in BEA vs. BLS on output growth, which could partially explain slower overall BEA productivity growth. However, Bosworth's analysis does not fully resolve the puzzling difference for air transportation and indeed his data do not seem to be entirely correct.²³ It is beyond the scope of this paper to study the BEA-BLS differences further, much less to explain them. Our main purpose is to identify the differences to set a future research agenda and at the end to summarize the implications of the differences for the assessment of the strength and industrial location of the post-1995 productivity growth revival.

22. Yuskavage (2001) shows a post-1995 revival in BEA gross output per full-time employee of 4.9 points compared to our 6.9. This difference could be due to our adjustment for hours per person engaged; this difference will be checked before the workshop.

23. Yuskavage (2001, Table 1b) has a growth rate of output per employee in air transport for 1987-95 of -3.4 percent per annum, whereas Bosworth (2001, Table 2) for 1990-95 has +1.1 percent per annum. This difference is too large to be accounted for by the differing time periods; reading numbers off Bosworth's Figure 3, his growth rate for 1987-95 appears to be roughly 0.0, far different from the Yuskavage number or ours in Table 4.

V. BEA Gross Output (GO) vs. Gross Product Originating (GPO)

For the period since 1987 we can compare productivity growth rates implied by two sources of BEA output data, the GPO data used in Table 1-3 and the GO data examined (for industries covered by BLS) in Table 4. At the level of detailed industries, these alternative measures provide amazingly different measures of the strength of the post-1995 productivity growth revival. Our analysis of the industrial breakdown of the GO data provides some important contrasts with the analysis of GPO data in Tables 2 and 3. In particular the performance of non-NE durable goods manufacturing and of nondurable goods manufacturing is much stronger in the 1995-99 period in the GO than in the GPO data. The contrast between the GO and GPO recovery rankings is even more pronounced at the level of individual industries, e.g., food and tobacco within nondurables.

Table 5 is arranged vertically exactly like Table 2. The top section shows productivity growth for the aggregate private economy and the same stripped subsets as in Table 2, and the bottom section like Table 2 lists the BEA industries by line number. Unlike Table 2, Table 5 refers only to the post-1987 period and provides annual growth rates for 1987-95, 1995-99, and the magnitude of the recovery between those two periods. Because the growth rate of productivity was lower in 1987-95 than in the 1972-95 period examined in Table 2, the measures of the post-1995 recovery for GPO are correspondingly higher in Table 5 than in Table 2. For the NFPB economy (line 2) the pre-1995 growth rate for GPO productivity was 1.19 percent in Table 2 and 0.94 percent in Table 5; hence the respective recovery growth rates were 1.22 and 1.46 percent, respectively. The recovery rate for GPO

in Table 5, line 2, is close to the 1.6 percent rate examined by Baily-Lawrence (2001) when comparing 1995-99 with the slightly shorter 1989-95 period.

Next we can look at lines 3-6 in Table 5. Here the recovery of Durable manufacturing is roughly the same in the two data sets, but the GO data registers a far superior revival performance for non-NE durables (line 6) and for nondurable manufacturing (line 7), 2.06 vs. 0.13 and 2.07 vs. 0.00 percent, respectively. By implication the GO data must imply a substantially smaller revival of NE manufacturing, and this finding appears on BEA line numbers 19 and 20 in the bottom section of Table 5. Going beyond manufacturing, line 12 in the top section of Table 5 strips out NE manufacturing, trade, and the two hot performers in the financial sector. The stripping out of these sectors totally eliminated the recovery for GPO data in Table 2, line 12, cutting a full 1.35 percentage points off the PNFb recovery. In Table 5 for the shorter time period the same exclusions reduce the magnitude of the recovery from 1.46 to 0.34 points in line 12, a somewhat smaller reduction of 1.12 points. These sectors are much less important in explaining the GO recovery, with a corresponding reduction from 1.66 points on line 2 to 1.14 points on line 12, a reduction of only 0.52 points. The different structure of the recovery in the GO data occurs because non-NE manufacturing, trade, and the two hot financial sectors all register weaker recoveries, while the remainder of manufacturing and numerous nonmanufacturing sectors register stronger recoveries (or smaller retrogressions).

These implications of the differences between GO and GPO measures of productivity growth and of the post-1995 recovery become more transparent in Table 6. Here the GPO

productivity growth rates are subtracted from the GO rates and are displayed for 1987-95, 1995-99, and the recovery values. The top section of Table 6 shows more explicitly the much stronger recovery performance in the GO data of non-NE durable manufacturing and of nondurable manufacturing, and the smaller role of those industries stripped out of the PNFB sector in lines 9-12. The bottom section of Table 6 highlights the individual sub-industries and industry aggregates with the largest GO-GPO differences in the recovery growth rate. Some of these annual growth rates are enormous, ranging from 13.35 percent per annum for tobacco at the top rank down to -19.75 percent per annum for "Holding, other investment offices" in the bottom rank. Among industries that have GO weights of more than 1.0 percent, the range is between Food at 6.63 percent per annum down to petroleum at -6.45 percent per annum. It is interesting that many of the industries that have large differences between GO and GPO productivity are those that process raw materials, e.g., tobacco, leather, food, stone, apparel, teextiles, fabricated metals, rubber, and petroleum, suggesting a possible role of errors in measuring intermediate materials (IM) quantities and prices.

The data in Tables 2 and 5 are brought together in Table 7, where the post-1995 recoveries by industry are listed in three columns — first the GPO recovery from the 1972-95 period, second the GPO recovery from the 1987-95 period, and third the GO recovery from the 1987-95 period. The top section shows the major industry groups and the bottom section the individual industries. The broadest generalization is that the GO recovery growth rates in the final column are more uniform than the equivalent GPO growth rates.

Industries which perform poorly in the GPO data do better in the GO data, including Construction, Non-NE Durables, Nondurables, Transportation/Communications/Public Utilities, and Non-Household Services. Industries which are the standouts in the GPO data do less well in the GO data, including Wholesale Trade, Retail Trade, and Finance/Insurance. The only exceptions to this generalization are agriculture, which goes from an average recovery to a negative recovery in the GO data, and mining, which goes from a below-average recovery to a mediocre recovery.

VI. Sources of Differences in GO vs. GPO Productivity Growth

The differences between GO and GPO measures of output growth, and hence productivity growth (since the hours measures are identical) originate in both measurement and substantive factors.

Measurement Differences

The current bible for understanding the sources of measurement differences is Yuskavage (2000). His Figure 2, reproduced here as Figure 1, helps to explain some of the reasons why GPO estimates may incorporate measurement errors that are not present in GO data. We can ignore the left half of the figure, which refers to an alternative (SNA) methodology not currently used in the United States. The right half shows the crucial aspects of the measurement of real GPO in current U. S. data that may be problematic.

First, nominal intermediate inputs for an industry are obtained as the difference between nominal gross output and nominal GPO, which is derived independently from the

components of gross domestic income, e.g., wages, salaries, rents, corporate profits, etc. Thus the nominal GO and GPO data come from entirely different source data, GO from industry reports from the Census Bureau and GPO income estimates from BLS, IRS, and other source data. "As a result, the levels of gross output, intermediate inputs, and GPO are not necessarily consistent with one another, even in a benchmark year" (Yuskavage, 2000, p. 23). Put another way, changes in the statistical discrepancy can creep into the difference between nominal GO and GPO, creating spurious differences in implied productivity growth that may not correspond to reality. Put another way, changes in the measured ratio of nominal IM to nominal GO may be spurious, since IM is a residual resulting from the subtraction of GPO based on one data source from GO based on another data source.

Second, as shown in Figure 1, real GPO is calculated as the difference between deflated GO and deflated IM (which is itself a residual incorporating the statistical discrepancy). Any combination of inconsistency among data sources used in computing nominal GPO and inconsistent or incorrect deflators for GO and IM could result in spurious movements in real GPO. For instance, imagine that there is a period when there is inflation in energy prices, and the price index used to deflate jet fuel prices as an IM to the airline industry is incorrect, either because it is based on the wrong type of fuel or fails to take into account hedging policies that mitigate fuel price swings for individual airlines. IM would be overdeflated for this period and the growth of real IM understated, leading to an overstatement in the growth of real GPO. This example is chosen because real GPO grew much faster than real GO in the airline industry in the 1987-99 period.

Substantive Differences

As Yuskavage emphasizes, two factors can create differences between the growth rates of real GO and real GPO for a given industry even if the measurement of all variables is completely consistent and correct. These two factors are changes in "nominal I-O ratios", i.e., the ratio of nominal IM to nominal GO in a given industry, and changes in relative prices, that is, differential growth rates of IM prices and GO prices. We can express this point by working out the definitional relationship between the growth of real GO and real GPO and these two factors.

The symbols used to express these relations are all lower-case letters to represent annual percentage growth rates. The nominal share of value-added (GPO) in nominal gross output (GO) is " α " and the nominal share of IM in GO, that is, the nominal I-O ratio, is " $1-\alpha$ ". Annual growth rates for any industry in any time period are represented by:

x	Nominal gross output (GO)
q	Real gross output
p	Gross output deflator = $x - q$
x^v	Nominal value-added (GPO)
q^v	Real value-added
p^v	Value-added deflator = $x^v - q^v$
x^m	Nominal materials input (IM)
q^m	Real materials input
p^m	Materials deflator = $x^m - q^m$

Relationships among these variables allow us to define the sources of differences in the growth rate of real GO minus real GPO output, that is, $q - q^v$. By definition:

$$q = \alpha q^v + (1-\alpha)q^m \quad (1)$$

This can be rearranged to express the annual growth rate of GPO:

$$q^v = [q - (1-\alpha)q^m]/\alpha \quad (2)$$

Our aim is to link the difference between GO and GPO growth to the nominal I-O ratio and changes in relative prices. Subtracting (2) from (1), we obtain:

$$q - q^v = [(1-\alpha)/\alpha](q^m - q) = [(1-\alpha)/\alpha][q^m - (x - p)] \quad (3)$$

When we add and subtract $[(1-\alpha)/\alpha]p^m$ from the final term and simplify, we obtain the final expression:

$$q - q^v = [(1-\alpha)/\alpha][(x^m - x) - (p^m - p)] \quad (4)$$

This equation states that the difference between the growth rates of real GO and real GPO equals the ratio of the materials share to the value-added share, times the growth rate in the nominal I-O ratio $(x^m - x)$ minus the growth rate in the relative price of materials.

Tables 8 and 9 present the components of equation (4). For the two periods and the recovery, three columns are displayed, corresponding to the difference between GO and GPO growth rates, the difference in the growth rates of nominal IM and nominal GO, and the difference between the IM deflator and the GO deflator. The first column in each set does not equal the sum of the second and third columns, as it should according to equation (4), due to the measurement issues discussed above and emphasized by Yuskavage. To make

sense of this vast array of numbers, Table 8 in its bottom section orders the industries by the post-1995 recovery in the annual rate of change in the nominal I-O ratio $(x^m - x)$. Then Table 9 orders the industries by the post-1995 recovery of the annual rate of change in the price ratio $[-(p^m - p)]$ over the 1995-99 period. As Yuskavage suggests, one would expect that major changes in real I-O ratios over short periods of time are implausible, since many of these ratios are fixed by technology (i.e., a relatively fixed ratio of sugar, cocoa, and workers to make a pound of candy). Thus we would expect that any major changes in the nominal I-O ratios should be accompanied by changes in the deflator ratio in the opposite direction, maintaining relatively fixed real I-O ratios. However, this does not occur for most of the industries listed in the bottom sections of Tables 7A and 7B. We note huge and implausible changes in some of the nominal I-O ratios that are not offset by changes in the input price ratios. There are large non-offset positive I-O ratio changes in Radio and TV, Leather and leather products, Communications, Petroleum and coal products, Motor vehicles, Stone, clay, and glass, and others. There are large non-offset negative I-O ratio changes in Transportation services, coal mining, amusement services, nonmetallic minerals, local transit, pipelines, and that tiny and mysterious industry "Holding, other investment offices." Supporting Yuskavage, we suspect that there is "potential bias arising from spurious fluctuations in nominal I-O ratios" (Yuskavage, 2000, p. 25). The huge annual growth rates of differences between GO productivity and GPO productivity displayed in Tables 6, 8, and 9 are likely to be resolved ultimately in favor of GO productivity as the more plausible set of numbers.

VII. Conclusion

This paper has provided a large amount of data and a relatively short and preliminary analysis of data discrepancies in evaluating the magnitude and industry location of the post-1995 productivity growth revival in the United States economy. Four data sources were examined, two of these were output per hour based on alternative output concepts published by the BEA — Gross Output (GO) and Gross Product Originating (i.e., value added, or gross output minus intermediate materials). Two sets of productivity measures published by the BLS were also examined, quarterly output per hour that is available promptly, but only for the total private economy, manufacturing, and a residual, and the detailed BLS productivity by industry data that cover a large number of industries at a level of detail greater than the BEA measures, but only for about half of the private economy.

The results are summarized in Figures 2-4. The first, Figure 2, displays alternative measures of the post-1995 productivity growth recovery for the nonfarm private business economy (excluding housing and household services). Recovery growth rates range from a low of 0.60 percent per year for the BLS industry aggregate in the right-hand bar to a high of 1.60 percent per year for the BEA GO measure. The two left-hand bars refer to recoveries from the longer 1972-95 slow-growth period and the five right-hand bars refer to recoveries from the shorter 1987-95 slow-growth period. For comparable measures the comparisons with 1987-95 always yield larger recovery growth rates than comparisons with the 1972-95 period. The fact that both the "GO-Comp" (i.e. from Table 4 the subset of BEA industries with BLS coverage) and "BLS Industry" growth rates are lower than the

others is notable in view of the partial coverage of the BLS Industry program; if the BLS-covered industries are in general "easier to measure" in the sense of Griliches (1994), then the productivity growth revival may be less impressive in the easier to measure industries.

Figure 3 provides a dramatic representation of the conflict among the alternative measures of the post-1995 revival in non-NE manufacturing, i.e., outside of the two sub-industries that produce computers, semiconductors, other electronic equipment, and industrial machinery. The GPO revival is negative relative to 1972-95 and roughly zero relative to 1987-95. In contrast the BEA GO, the GO-comp, and BLS Industry revivals are all strongly positive, with the two BEA GO measures close to two percent per annum. Figure 4 displays for the nonfarm nonhousing nonmanufacturing economy a wide variety of revival estimates from the same data sources as in Figure 2. Comparisons are always less favorable when 1995-99 is compared to 1972-95 rather than 1987-95, and the industries covered by the BLS industry productivity program show virtually no revival at all in either the GO-comp or BLS data. The large difference between the GO and GO-comp bars reflect the relatively strong revivals in the GO data of industries not covered by the BLS, especially air transportation, pipelines, telephone, security brokers, insurance agents, legal services, and other services.

Perhaps the most important conclusion is to echo that of Robert Yuskavage (2000) in discussing the difference between the BEA GO and GPO measures of output. The indirect method of measuring real GPO, which involves burying the statistical discrepancy in nominal GPO and then double-deflating after that, creates implausible short-term

movements in nominal Input-Output (I-O) ratios that cannot be justified or explained by movements in the relative price of materials. Those industries that have the largest growth-rate differences in output and productivity between the GPO and GO data sets are in most cases that have the large and implausible growth rates of the I-O ratio. This suggests that in many or most cases productivity growth rates using GO data are more reliable than those based on GPO data, as analyzed above and by Baily-Lawrence (2001) and Nordhaus (2001).

The outstanding puzzle that leaps out from the tables of this paper is the poor performance in the GPO data of non-NE (New Economy) durable manufacturing and of nondurable manufacturing. All the other data sources — quarterly BLS, industry BLS, and BEA GO data — agree that there has been no slowdown and in fact a productivity revival in non-NE durable manufacturing and in nondurable manufacturing.²⁴

As noted above, the post-1995 productivity growth recovery is more evenly distributed across industries in the BEA GO data than in the BEA GPO data. The recoveries in NE manufacturing, trade, and finance are smaller, and this is offset by better performance of GO data in most of the rest of the economy outside of manufacturing, except for Wholesale and Retail Trade and two sub-industries within Finance and Insurance. When compared with GO data with overlapping coverage, the BLS industry data goes even further in providing a "flatter" profile across industries of the post-1995 revival, with slower positive recovery rates in manufacturing, transportation, and retailing, but a better (i.e., non-negative) revival in the few services that are covered by the BLS.

24. The BLS quarterly data only provide a direct measure for nondurable manufacturing.

For the crucial debate about the industry sources of the post-1995 productivity revival, the BEA gross output measures of productivity seem to provide the best guidance. In this context the key table in this paper is Table 5. Here we find that the key industries identified by Nordhaus and Baily-Lawrence as the locations of the productivity revival outside of NE manufacturing are much less important in GO than GPO data, while instead in GO data the revival is more broadly scattered across the economy, not just in non-NE manufacturing but in non-manufacturing sectors like communications, telephone, air transportation, and construction.

Do the BEA GO data support the view that the post-1995 productivity growth revival was broadly based rather than centered in computer or "NE" manufacturing? My previous analysis (2000) accepted the view of Oliner and Sichel that there was a large contribution not just of the production of computers but also of the use of computers. To assess this view we need to ask which sectors were the heaviest purchasers and users of computers. The following information from BEA sources is provided in McGuckin (2000) and can be compared with the distribution of GO in 1996, with all figures in percent:

	Computer Capital	Gross Output	Difference
Agriculture	0.0	2.2	-2.2
Mining	0.4	1.5	-1.1
Construction	0.1	4.5	-4.4

Durable Manufacturing	10.0	15.8	-5.8
Nondurable Manufacturing	6.5	13.5	-7.0
Trans, Comm, Public Utilities	4.5	9.3	-4.8
Wholesale Trade	18.0	6.3	+11.7
Retail Trade	6.5	8.6	-2.1
Finance, Insurance	29.0	7.9	+21.1
Services	24.0	20.1	+3.9

The heavy computer users are wholesale, finance/insurance, and to a lesser extent services. However wholesale trade had a below-average GO recovery of 1.20 percent per annum, almost the same as finance and insurance where the recovery was 1.21 percent. Non-household services had a minimal recovery of 0.65 percent. Much of the recovery in GO data was in industries that are not heavy computer users, including non-NE durables, nondurable manufacturing, local transit, and pipelines. A few of the rapidly recovering industries outside of manufacturing are relatively heavy computer users, including air transportation and telephone/telegraph.

The apparent superiority of the GO relative to the GPO data and the widely dispersed pattern of productivity revivals leads me to the conclusion that the role of an IT revolution has been exaggerated. The pattern of productivity revival by industry does not seem tightly related to computer use intensity. The productivity revival across industries is more likely to represent a number of separate industry stories that are not tightly related to IT use than a uniform IT-based "New Economy" explanation of the productivity growth revival. In this sense the post-1995 revival turns out not to be easily explainable by one

"silver bullet" explanation. The simultaneous revival of so many different industries could reflect mysterious animal spirits that are as inexplicable as the post-1972 growth slowdown, or it could be consistent with an ultimate verdict that a substantial portion of the post-1995 revival was cyclical.

Two qualifications are required before the dialogue begins on the significance of this vast array of numbers. First, I have joined all other analysts in taking the 1995-99 revival at face value and not deflating it, at least at the industry level, by deducting a cyclical effect. Yet all analysts should be cautious about treating the measures presented here as an indicator of "structural" change that might persist over the next half-decade. Second, I have skipped entirely over issues of methodological change that may contaminate comparisons across periods. While there are many puzzles and doubts suggested by the numbers in this paper, of at least one thing we may be sure: the acceleration of productivity growth for the securities industry in Table 2, BEA line 54, from 3.0 percent per annum during 1972-95 to 17.8 percent per annum in 1995-99 is surely a statistical will o' the wisp. The securities industry did not suddenly discover computerization in 1995, and much other evidence, including the raw volumes of securities traded (which somehow grew from 5m per day in the 1960s to 500m per day in 1987), suggests that the BEA changed its methodology radically in a way that exaggerates the magnitude of the post-1995 productivity growth revival in this and perhaps other industries.²⁵

25. Baily-Gordon (1988) provided data on the rapid growth rates of the volume of check-clearing in the banking sector in the 1970s and 1980s.

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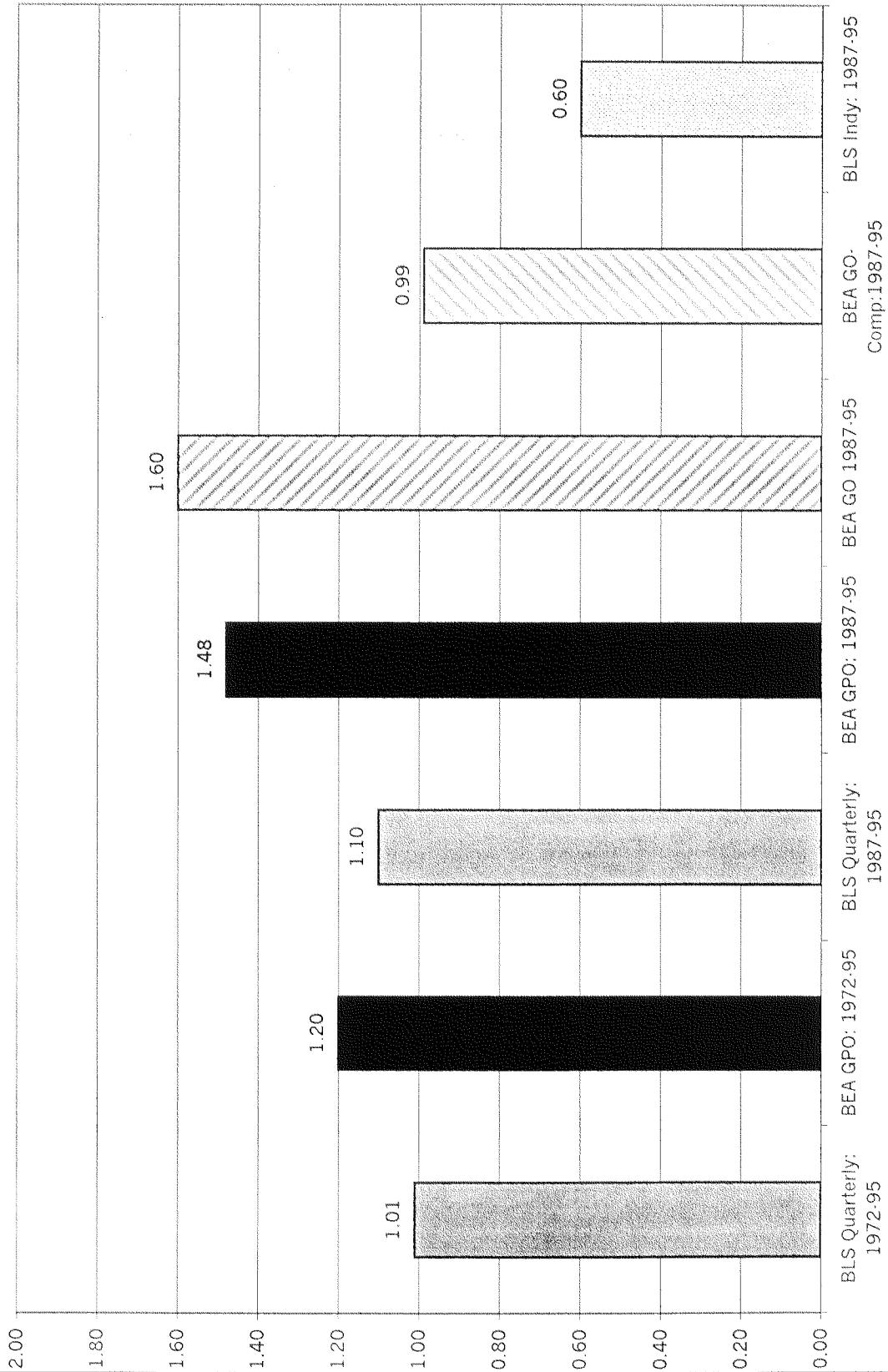
Figure 1.--Alternative Approaches to Measuring Industry GPO

Item	PRODUCTION ACCOUNT APPROACH (SNA)		PRESENT BEA APPROACH	
	NOMINAL	REAL (1996\$) ²	NOMINAL	REAL (1996\$) ²
Gross Output	A	$A_{96\$}$	D	$D_{96\$}$
Intermediate Inputs	B	$B_{96\$}$	$E=(D-F)^1$	$E_{96\$}$
GPO or Value Added	$C=(A-B)$	$C_{96\$}=(A_{96\$}-B_{96\$})$	F^1	$F_{96\$}=(D_{96\$}-E_{96\$})$

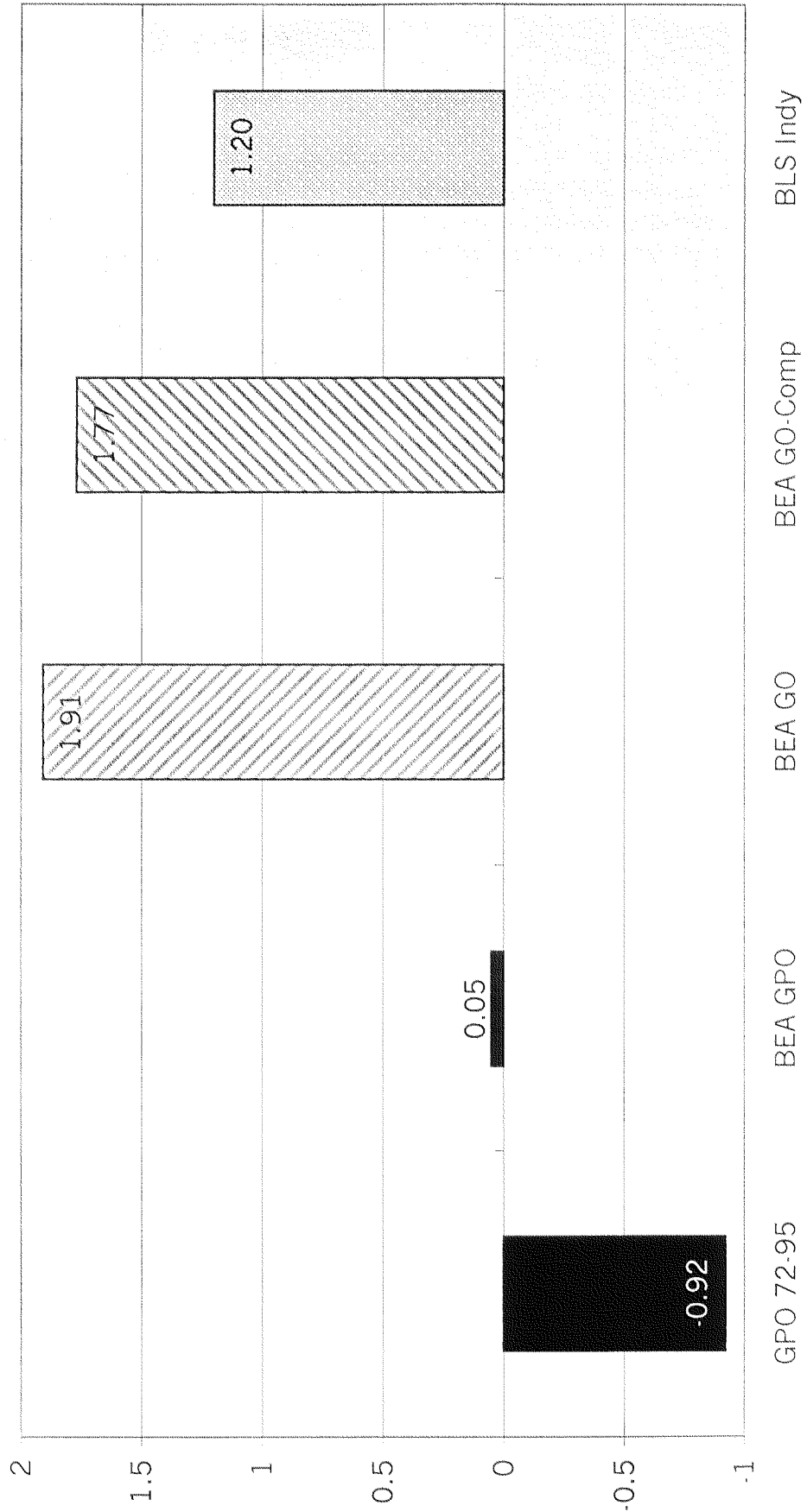
¹ Equals the sum of industry distributions of each of the 16 components of gross domestic income from the NIPAs. These components--grouped into broader categories--include compensation of employees, indirect business tax and nontax liability, and property-type income.

² Real GPO or value-added estimates are computed in a Fisher index number formula. The fixed-weight Laspeyres representation is shown here for illustrative purposes.

**Figure 2:
Post-1995 Revival in Output per Hour Growth,
Private Nonfarm Nonhousing Economy**



**Figure 3:
Post-1995 Revival in Output per Hour Growth,
Non-New Economy Manufacturing**



**Figure 4:
 Post-1995 Revival in Output per Hour Growth, Private Nonfarm
 Nonhousing NonManufacturing Economy**

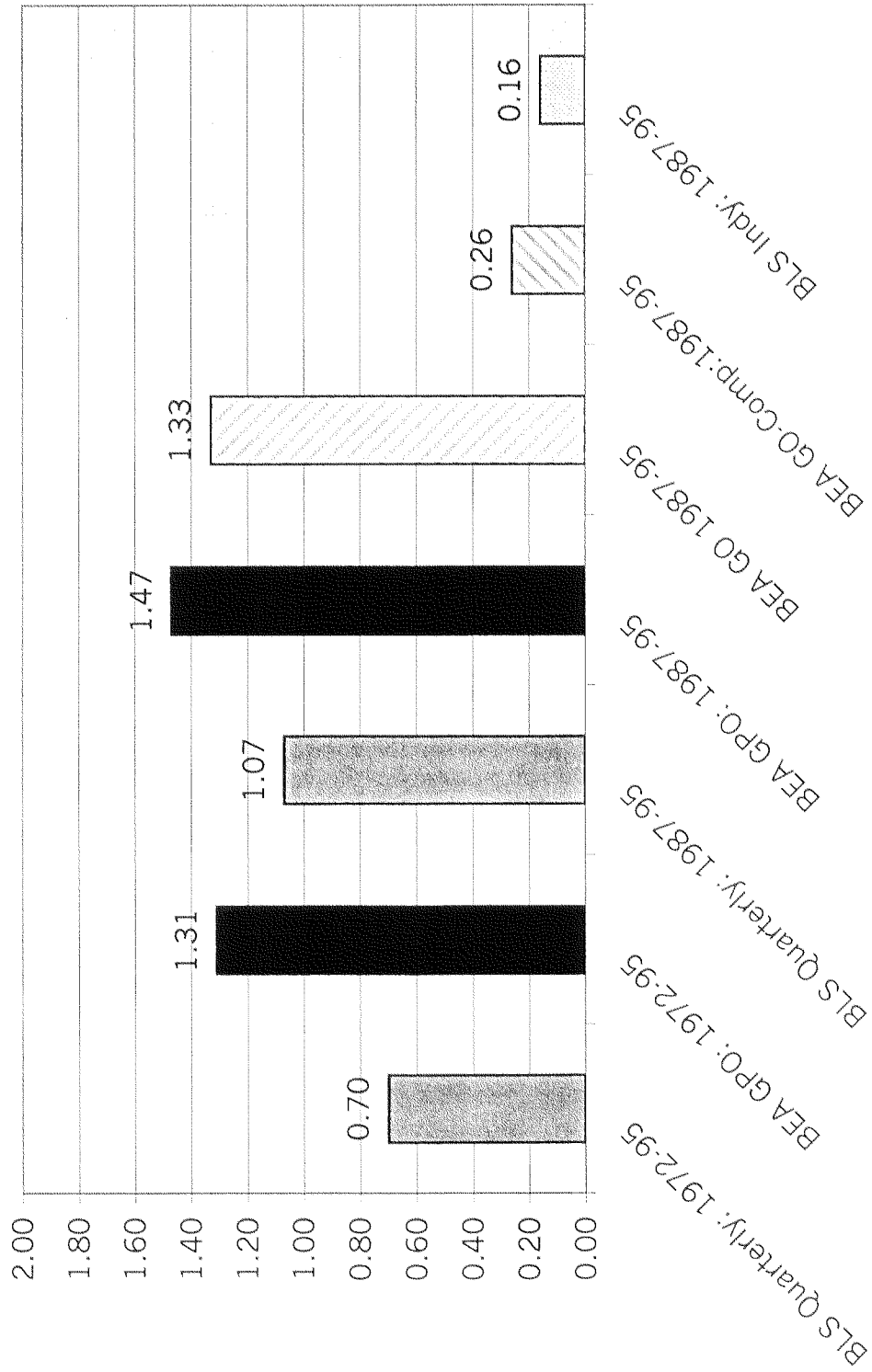


Table 1

**Output per Hour,
BLS Quarterly vs. BEA Gross Product Originating,
1948-99, Selected Intervals, Annual Percentage Growth Rates**

	1948-72	1972-95	1995-99	Slowdown (1972-95 vs. 1948-72)	Recovery (1995-99 vs. 1972-95)
BLS					
Private NonFarm	2.82	1.41	2.42	-1.40	1.01
Manufacturing#	2.70	2.51	4.87	-0.19	2.35
Durables#	2.55	3.01	6.57	0.45	3.56
NonDurable#	2.87	1.93	2.87	-0.94	0.94
Residual#	2.83	1.00	1.70	-1.83	0.70
BEA					
Private NonFarm Business	2.13	1.09	2.41	-0.93	1.32
Manufacturing	2.75	2.79	4.36	0.04	1.57
Durable	2.40	3.04	6.70	0.64	3.66
NonDurable	3.22	2.46	1.24	-0.76	-1.22
Residual	1.61	0.42	1.85	-1.21	1.26
BLS minus BEA					
Private NonFarm Business	0.68	0.32	0.01	-0.36	-0.31
Manufacturing	-0.05	-0.28	0.51	-0.23	0.78
Durable	0.15	-0.03	-0.13	-0.19	-0.10
NonDurable	-0.35	-0.53	1.63	-0.18	2.16
Residual	1.22	0.58	-0.15	-0.64	-0.73
#- Data for these categories begin in 1949, not 1948					

Table 2

**Output per Hour,
BEA Gross Product Originating,
1948-99, Selected Intervals, Annual Percentage Growth Rates**

Growth Rates by Industry	BEA Industry #	1948-72	1972-95	1995-99	Slowdown (1972-95 vs. 1948-72)	Recovery (1995-99 vs. 1972-95)
1. Private Industries	#2 - 57, 75	2.54	1.21	2.41	-1.33	1.20
2. Private Nonfarm	#2 - 3, 57, 75	2.45	1.19	2.41	-1.25	1.22
3. Manufacturing	#12	3.16	2.91	4.36	-0.25	1.45
4. Mfg. minus NEM	#12 - 19, 20	3.12	1.94	1.02	-1.17	-0.92
5. Durable Mfg.	#13	2.81	3.16	6.70	0.36	3.54
6. Durable minus NEM	#13 - 19, 20	2.57	1.27	0.80	-1.30	-0.47
7. Non Durable Mfg.	#25	3.63	2.58	1.24	-1.05	-1.34
8. Private Nonfarm Non Mfg.	#2 - 3, 13, 25, 57, 75	2.02	0.54	1.85	-1.49	1.31
9. Private Nonfarm NonNEM Non Fine	#2 - 3, 19, 20, 54, 57, 60, 75	2.39	0.88	1.34	-1.51	0.46
10. Private Nonfarm NonNEM	#2 - 3, 19, 20, 57, 75	2.38	0.88	1.70	-1.50	0.82
11. Private Nonfarm NonFine	#2 - 3, 54, 57, 60, 75	2.46	1.20	2.08	-1.25	0.88
12. Private Nonfarm NonNEM NonTrade NonFine	#2 - 3, 19, 20, 49, 50, 54, 57, 60,	2.32	0.63	-0.09	-1.69	-0.72
Domestic Industries						
1 Private Industries		2.41	1.22	1.97	-1.19	0.76
2 Private Industries		2.68	1.16	2.17	-1.51	1.01
3 Agriculture, forestry, fisheries		3.91	1.91	1.58	-2.00	-0.33
4 Farms		4.45	3.36	3.63	-1.10	0.28
5 Agriculture services, forestry, fisheries		-0.94	0.10	-0.91	1.04	-1.00
6 Mining		4.66	0.70	4.64	-3.96	3.94
7 Metal mining		2.84	5.60	15.95	2.75	10.35
8 Coal mining		4.44	5.47	12.00	1.02	6.53
9 Oil and gas extraction		3.23	-1.16	2.59	-4.40	3.75
10 Nonmetallic minerals, except fuels		3.44	1.74	5.97	-1.70	4.23
11 Construction		0.93	-0.66	-0.82	-1.59	-0.16
12 Manufacturing		3.16	2.91	4.36	-0.25	1.45

Growth Rates by Industry	BEA Industry #	Slowdown (1972-95 vs. 1948-72)			Recovery (1995-99 vs. 1972-95)		
		1948-72	1972-95	1995-99	1948-72	1995-99	1972-95
Durable Goods							
Lumber and wood products	13	2.81	3.16	6.70	0.36	3.54	3.54
Furniture and fixtures	14	4.00	0.80	-2.00	-3.19	-2.81	-2.81
Stone, clay, and glass products	15	2.49	1.53	1.46	-0.96	-0.06	-0.06
Primary metal industries	16	2.81	1.64	1.81	-1.17	0.17	0.17
Fabricated metal industries	17	1.68	1.33	5.13	-0.35	3.81	3.81
Machinery (except elect)	18	2.62	1.97	0.07	-0.64	-1.90	-1.90
Electric Equip..	19	2.42	5.54	13.15	3.12	7.61	7.61
Motor vehicles and equipment	20	4.50	7.63	18.52	3.13	10.89	10.89
Other transportation equipment	21	4.55	1.21	0.25	-3.35	-0.95	-0.95
Other transports and related products	22	2.71	0.40	1.55	-2.31	1.15	1.15
Instruments and related products	23	3.68	-0.37	-2.07	-4.05	-1.70	-1.70
Miscellaneous manufacturing industries	24	3.58	2.25	2.19	-1.33	-0.06	-0.06
NonDurable Goods	25	3.63	2.58	1.24	-1.05	-1.34	-1.34
Food and kindred products	26	3.47	3.29	-3.35	-0.18	-6.64	-6.64
Tobacco manufactures	27	3.81	-2.19	-16.68	-6.00	-14.49	-14.49
Textile mill products	28	4.93	4.40	1.42	-0.53	-2.97	-2.97
Apparel and textile products	29	2.76	3.23	3.18	0.47	-0.05	-0.05
Paper and allied products	30	3.08	1.74	2.78	-1.34	1.04	1.04
Printing and publishing	31	2.44	-0.88	-1.19	-3.32	-0.31	-0.31
Chemicals and allied products	32	4.92	3.07	3.51	-1.85	0.45	0.45
Petroleum and coal products	33	4.73	5.24	8.92	0.52	3.68	3.68
Rubber and miscellaneous plastic products	34	2.75	3.54	3.02	0.80	-0.52	-0.52
Leather and leather products	35	1.38	3.78	1.01	2.40	-2.78	-2.78
Transportation, Com., and Pub. utilities	36	3.72	2.33	2.37	-1.39	0.04	0.04
Transportation	37	2.59	1.81	2.80	-0.77	0.99	0.99
Railroad transportation	38	4.27	6.97	2.30	2.70	-4.67	-4.67
Local, interurban passenger transit	39	-2.52	-2.37	3.86	0.14	6.24	6.24
Trucking and Warehousing	40	4.34	1.66	0.38	-2.68	-1.29	-1.29
Water transportation	41	2.50	2.23	2.75	-0.28	0.52	0.52
Transportation by Air	42	6.19	1.89	5.56	-4.30	3.67	3.67
Pipelines (not natural gas)	43	9.00	-0.67	13.56	-9.67	14.22	14.22
Transportation services	44	-0.82	0.00	4.31	0.82	4.31	4.31
Communications	45	5.48	4.75	2.86	-0.73	-1.90	-1.90
Telephone and telegraph	46	5.83	5.56	5.13	-0.27	-0.43	-0.43

Growth Rates by Industry	BEA Industry #	Slowdown		Recovery		
		1948-72	1972-95	1948-72	1972-95	
Radio and TV	47	1.86	1.15	-4.32	-0.71	-5.47
Electric, gas, sanitary services	48	5.94	1.39	2.51	-4.54	1.12
Wholesale Trade	49	3.48	2.55	7.57	-0.92	5.01
Retail Trade	50	1.99	1.11	5.32	-0.88	4.21
Finance and Insurance	51 - 57	0.76	0.04	3.86	-0.72	3.82
Depository institutions	52	0.41	0.16	0.42	-0.26	0.26
Nondepository institutions	53	0.23	4.83	0.54	4.60	-4.30
Security and commodity brokers	54	0.47	3.16	17.82	2.69	14.67
Insurance carriers	55	1.51	-1.27	0.13	-2.78	1.40
Insurance agents, brokers, service	56	0.89	-2.03	-1.19	-2.92	0.85
Holding, other investment offices	60	0.11	-7.83	17.96	-7.94	25.80
Services Non-Household	61 - 75	1.54	-0.14	-0.14	-1.68	0.01
Hotels and other lodging places	62	1.25	0.06	-1.35	-1.18	-1.41
Personal services	63	2.27	-0.78	1.15	-3.05	1.93
Business services	64	0.07	0.90	1.80	0.83	0.89
Auto repair, services, parking	65	3.60	-0.08	0.45	-3.68	0.53
Miscellaneous repair services	66	0.28	-0.25	-1.22	-0.53	-0.98
Motion Pictures	67	0.11	0.31	-1.44	0.20	-1.75
Amusement and recreation services	68	1.03	0.76	1.41	-0.27	0.65
Health services	69	1.16	-1.10	-1.38	-2.26	-0.28
Legal services	70	0.57	-2.27	0.15	-2.84	2.43
Educational services	71	0.34	-0.03	-2.37	-0.38	-2.33
Social services, Membership org.	72 & 73	0.52	-0.04	-2.56	-0.57	-2.52
Other services	74	0.61	-1.79	-0.03	-2.39	1.75
Gvmt. and gvmt. enterprises	76	0.63	0.50	0.95	-0.13	0.44
Federal	77	0.94	1.23	2.28	0.29	1.05
Government	78	0.79	1.31	1.69	0.53	0.38
Government enterprises	79	1.97	0.75	5.43	-1.21	4.68
State and local	80	0.51	0.35	0.82	-0.16	0.47
Government	81	0.84	0.39	0.62	-0.45	0.23
Government enterprises	82	-2.34	-0.09	3.40	2.26	3.49

Table 3
Output per Hour,
BEA Gross Product Originating,
1948-99, Selected Intervals, Annual Percentage Growth Rates
Industries Ranked by Value of Post 1995 Recovery

Recov. Rank	Growth Rates by Industry	BEA Industry #	Recovery (1995-99 vs. 1972-95)	Slowdown (1972-95 vs. 1948-72)	Slowdown Rank	Share in 1996 GPO
1	Holding, other investment offices	60	25.80	-7.95	2	0.07
2	Security and commodity brokers	54	14.67	2.68	62	1.59
3	Pipelines (not natural gas)	43	14.22	-9.68	1	0.08
4	Electric Equip..	20	10.89	3.12	66	2.26
5	Metal mining	7	10.35	2.74	64	0.09
6	Machinery (except elect)	19	7.61	3.11	65	2.01
7	Coal mining	8	6.53	1.01	60	0.16
8	Local, interurban passenger transit	39	6.24	0.13	52	0.20
9	Wholesale Trade	49	5.01	-0.93	34	7.80
10	Transportation services	44	4.31	0.81	58	0.38
11	Nonmetallic minerals, except fuels	10	4.23	-1.71	22	0.15
12	Retail Trade	50	4.21	-0.89	35	10.11
13	Mining	6	3.94	-3.97	8	1.66
14	Finance and Insurance	51 - 57	3.82	-0.73	38	8.32
15	Primary metal industries	17	3.81	-0.36	45	0.75
16	Oil and gas extraction	9	3.75	-4.41	5	1.27
17	Petroleum and coal products	33	3.68	0.51	56	0.44
18	Transportation by Air	42	3.67	-4.31	6	1.04
19	Durable Goods	13	3.54	0.35	54	11.02
20	Legal services	70	2.43	-2.85	15	1.44
21	Personal services	63	1.93	-3.06	13	0.70
22	Other services	74	1.75	-2.40	18	3.08
23	Manufacturing	12	1.45	-0.26	50	19.37
24	Insurance carriers	55	1.40	-2.79	16	1.82
25	Other transportation equipment	22	1.15	-2.32	19	0.76
26	Electric, gas, sanitary services	48	1.12	-4.55	4	3.07
27	Paper and allied products	30	1.04	-1.35	27	0.82
28	Private Industries	2	1.01	-1.52	25	100.00
29	Transportation	37	0.99	-0.78	36	3.58
30	Business services	64	0.89	0.82	59	5.04
31	Insurance agents, brokers, service	56	0.85	-2.93	14	0.72
32	Domestic Industries	1	0.76	-1.20	29	115.02
33	Amusement and recreation services	68	0.65	-0.28	48	0.86
34	Auto repair, services, parking	65	0.53	-3.69	9	1.01
35	Water transportation	41	0.52	-0.29	46	0.18
36	Chemicals and allied products	32	0.45	-1.86	21	2.26

Recov. Rank	Growth Rates by Industry	BEA Industry #	Recovery (1995-99 vs. 1972-95)	Slowdown (1972-95 vs. 1948-72)	Slowdown Rank	Share in 1996 GPO
37	Depository institutions	52	0.26	-0.27	49	3.55
38	Stone, clay, and glass products	16	0.17	-1.18	31	0.49
39	Transportation, Com. and Pub. Util	36	0.04	-1.40	26	9.81
40	Services Non-Household	61 - 75	0.01	-1.69	23	22.85
41	Apparel and textile products	29	-0.05	0.46	55	0.40
42	Miscellaneous manufacturing industri	24	-0.06	-1.34	28	0.35
43	Furniture and fixtures	15	-0.06	-0.97	33	0.30
44	Construction	11	-0.16	-1.60	24	4.66
45	Health services	69	-0.28	-2.27	20	6.76
46	Printing and publishing	31	-0.31	-3.33	11	1.30
47	Telephone and telegraph	46	-0.43	-0.28	47	2.41
48	Rubber and miscellaneous plastic pro	34	-0.52	0.79	57	0.73
49	Motor vehicles and equipment	21	-0.95	-3.36	10	1.36
50	Miscellaneous repair services	66	-0.98	-0.54	43	0.32
51	Trucking and Warehousing	40	-1.29	-2.69	17	1.36
52	NonDurable Goods	25	-1.34	-1.06	32	8.36
53	Hotels and other lodging places	62	-1.41	-1.19	30	0.98
54	Instruments and related products	23	-1.70	-4.06	7	0.79
55	Motion Pictures	67	-1.75	0.19	53	0.36
56	Communications	45	-1.90	-0.74	37	3.16
57	Fabricated metal industries	18	-1.90	-0.65	40	1.37
58	Educational services	71	-2.33	-0.39	44	0.85
59	Social services, Membership org..	72 & 73	-2.52	-0.58	41	1.46
60	Leather and leather products	35	-2.78	2.39	61	0.06
61	Lumber and wood products	14	-2.81	-3.20	12	0.59
62	Textile mill products	28	-2.97	-0.54	42	0.37
63	Nondepository institutions	53	-4.30	4.59	67	0.58
64	Railroad transportation	38	-4.67	2.69	63	0.35
65	Radio and TV	47	-5.47	-0.72	39	0.75
66	Food and kindred products	26	-6.64	-0.19	51	1.75
67	Tobacco manufactures	27	-14.49	-6.01	3	0.22

Table 4

Output per Hour,
BEA Gross Output vs. BLS Annual,
1948-99, Selected Intervals, Annual Percentage Growth Rates

BEA GO vs. BLS	GO		BLS		Difference, BEA-BLS		Aggregation Weight for large Ind.	
	BEA Ind. #	Growth rates 1987-95	Growth rates 1995-99	Growth rates 1987-95	Growth rates 1995-99	1987-95		1995-99
Private Industries	#2	1.09	2.08	1.04	1.64	0.04	0.44	48.21
Mining	#6	2.46	3.16	1.85	2.25	0.62	0.90	1.50
Manufacturing	#12	2.65	5.13	2.52	4.02	0.13	1.12	29.36
Mfg. minus NEM	#12-19, 20	1.12	2.89	1.53	2.73	-0.41	0.15	23.87
Durable Goods	#13	3.71	6.55	3.47	5.68	0.24	0.87	15.83
Durable minus NEM	#13-19, 20	0.87	2.38	1.09	2.35	-0.22	0.03	12.88
NonDurable Goods	#25	1.41	3.48	1.42	2.07	-0.01	1.41	13.53
Private NonMfg.	#2-12	0.31	0.57	0.30	0.46	0.00	0.11	18.85
Transportation and public utilities	#36	2.45	3.90	2.82	2.16	-0.38	1.74	5.78
Transportation	#35	1.20	2.24	1.28	0.46	-0.08	1.78	3.83
Communications	#45	4.17	6.15	3.80	4.34	0.38	1.81	2.80
Retail Trade	#50	1.20	3.53	0.97	3.12	0.23	0.41	8.59
Services	#61	0.84	-0.11	0.95	1.15	-0.11	-1.26	2.98
Domestic Industries	1	1.27	2.69					108.82
Private Industries	2	0.92	1.84	1.04	1.64	-0.13	0.20	48.21
Agriculture, forestry, fisheries	3	0.86	-0.27					2.23
Farms	4	2.81	1.01					1.79
Agriculture services, forestry, fisheries	5	-0.56	-0.50					0.45
Mining	6	2.46	3.16	1.85	2.25	0.62	0.90	1.50
Metal mining	7	3.77	4.99	2.03	1.76	1.75	3.23	0.10
Coal mining	8	6.72	7.18	5.52	5.32	1.20	1.86	0.22
Oil and gas extraction	9	1.72	2.20	1.24	1.81	0.48	0.39	1.04
Nonmetallic minerals, except fuels	10	0.50	3.15	0.55	1.10	-0.05	2.05	0.14
Construction	11	-1.14	-0.69					4.45
Manufacturing	12	2.65	5.13	2.52	4.02	0.13	1.12	29.36

BEA GO vs. BLS	GO			BLS			Difference,			Aggregation Weight for large Ind.	
	BEA Ind. #	Growth rates		Growth rates		BEA-BLS		1995-99	1995-99		1995-99
		1987-95	1995-99	1987-95	1995-99	1987-95	1995-99				
Durable Goods	13	3.71	6.55	3.47	5.68	0.24	0.87	15.83			
Lumber and wood products	14	-1.16	1.70	-0.04	3.59	-1.12	-1.88	0.85			
Furniture and fixtures	15	1.14	3.28	1.78	4.20	-0.64	-0.92	0.44			
Stone, clay, and glass products	16	0.66	4.13	0.94	3.10	-0.29	1.03	0.65			
Primary metal industries	17	2.41	3.29	2.44	2.61	-0.03	0.68	1.43			
Fabricated metal industries	18	1.02	2.48	2.03	0.71	-1.01	1.77	1.68			
Machinery (except elect)	19	6.57	9.81	5.37	6.83	1.20	2.98	2.98			
Electric Equip..	20	10.11	14.59	8.59	12.85	1.52	1.74	2.52			
Motor vehicles and equipment	21	1.79	4.77	0.81	6.16	0.98	-1.39	2.61			
Other transportation equipment	22	1.23	5.32	1.20	5.40	0.03	-0.08	1.09			
Instruments and related products	23	3.26	2.75	4.27	2.27	-1.01	0.48	1.19			
Miscellaneous manufacturing industries	24	0.92	4.60	1.40	1.85	-0.48	2.75	0.39			
NonDurable Goods	25	1.41	3.48	1.42	2.07	-0.01	1.41	13.53			
Food and kindred products	26	1.40	2.12	1.11	1.33	0.29	0.79	3.61			
Tobacco manufactures	27	3.58	1.38	3.05	-0.87	0.53	2.25	0.32			
Textile mill products	28	2.35	4.42	2.58	2.44	-0.23	1.98	0.64			
Apparel and textile products	29	2.14	6.88	2.27	7.09	-0.13	-0.21	0.60			
Paper and allied products	30	1.44	1.37	1.48	0.66	-0.04	0.71	1.28			
Printing and publishing	31	-0.97	1.64	-0.69	3.15	-0.28	-1.51	1.58			
Chemicals and allied products	32	1.54	4.15	1.40	1.83	0.14	2.32	2.88			
Petroleum and coal products	33	2.07	4.06	2.60	2.54	-0.53	1.51	1.37			
Rubber and miscellaneous plastic product	34	2.86	3.58	2.32	2.36	0.54	1.22	1.19			
Leather and leather products	35	0.79	5.72	0.57	4.73	0.22	0.99	0.07			
Transportation and communications	36	2.45	3.90	2.82	2.16	-0.38	1.74	5.78			
Transportation	37	1.20	2.24	1.28	0.46	-0.08	1.78	3.83			
Railroad transportation	38	5.59	3.18	5.57	0.20	0.01	2.98	0.33			
Local, interurban passenger transit	39	-2.36	0.06					0.19			
Trucking and Warehousing	40	4.06	2.01	2.83	0.27	1.23	1.74	1.71			
Water transportation	41	1.52	3.42					0.29			
Transportation by Air	42	-4.20	2.70	1.03	-0.01	-5.23	2.72	0.94			
Pipelines (not natural gas)	43	-0.08	6.28					0.06			
Transportation services	44	1.51	4.71					0.30			
Communications	45	4.17	6.15	3.80	4.34	0.38	1.81	2.80			

BEA GO vs. BLS	BEA Ind. #	GO		BLS		Difference, BEA-BLS		Aggregation Weight for large Ind.
		Growth rates		Growth rates		1987-95 1987-95 1995-99 1995-99		
		1987-95	1995-99	1987-95	1995-99	1987-95	1995-99	
Telephone and telegraph	46	5.55	7.55	4.91	6.11	0.64	1.44	2.17
Radio and TV	47	0.09	0.85	-0.02	-1.73	0.11	2.58	0.63
Electric, gas, sanitary services	48	2.25	2.04					2.70
Wholesale Trade	49	3.04	4.24					6.33
Retail Trade	50	1.20	3.53	0.97	3.12	0.23	0.41	8.59
Finance and Insurance	51	2.45	2.14					18.02
Depository institutions	52	3.03	1.97	2.12	1.22	0.92	0.75	2.75
Nondepository institutions	53	4.86	2.06					0.87
Security and commodity brokers	54	7.13	14.47					1.36
Insurance carriers	55	0.21	-3.47					2.10
Insurance agents, brokers, service	56	-3.14	2.25					0.59
Real Estate	57	2.53	0.98					10.17
Holding, other investment offices	60	-9.51	12.39					0.19
Services	61	0.84	-0.11	0.95	1.15	-0.11	-1.26	2.98
Hotels and other lodging places	62	0.53	-1.29	1.16	0.74	-0.63	-2.02	0.85
Personal services	63	1.50	1.07	0.85	2.46	0.65	-1.39	0.68
Business services	64	2.80	3.98					4.09
Auto repair, services, parking	65	1.24	0.74	1.24	0.91	0.00	-0.17	1.00
Miscellaneous repair services	66	2.45	2.46					0.37
Motion Pictures	67	-0.45	-1.49	0.04	0.52	-0.49	-2.02	0.46
Amusement and recreation services	68	1.74	0.28					0.89
Health services	69	-0.61	-0.26					5.52
Legal services	70	-0.02	1.63					1.08
Educational services	71	0.36	-1.08					0.83
Social services, Membership org.	72 & 73	0.18	-1.10					1.56
Other services	74	-0.51	2.38					2.78
Private households	75	0.47	-4.92					0.10

Industry Title	Ind. #	1987-95				1995-99			
		Growth Rates		Growth Rates		Growth Rates		Recovery	
		GO	GPO	GO	GPO	GO	GPO	GO	GPO
Coal mining	8	0.16	6.72	9.49	7.18	12.00	0.46	2.50	
Oil and gas extraction	9	1.04	1.72	3.09	2.20	2.59	0.48	-0.50	
Nonmetallic minerals, except fuels	10	0.14	0.50	-0.24	3.15	5.97	2.66	6.20	
Construction	11	4.45	-1.14	-0.16	-0.69	-0.82	0.46	-0.65	
Manufacturing	12	29.36	2.65	2.66	5.05	4.36	2.40	1.70	
Durable Goods	13	15.83	3.71	3.73	6.55	6.70	2.83	2.97	
Lumber and wood products	14	0.85	-1.16	-3.45	1.70	-2.00	2.86	1.45	
Furniture and fixtures	15	0.44	1.14	0.58	3.28	1.46	2.14	0.89	
Stone, clay, and glass products	16	0.65	0.66	2.75	4.13	1.81	3.47	-0.94	
Primary metal industries	17	1.43	2.41	2.33	3.29	5.13	0.88	2.80	
Fabricated metal industries	18	1.68	1.02	1.38	2.48	0.07	1.46	-1.31	
Machinery (except elect)	19	2.98	6.57	6.22	9.81	13.15	3.24	6.93	
Electric Equip..	20	2.52	10.11	11.77	14.59	18.52	4.49	6.75	
Motor vehicles and equipment	21	2.61	1.79	0.56	4.77	0.25	2.98	-0.31	
Other transportation equipment	22	1.09	1.23	-1.16	5.32	1.55	4.08	2.71	
Instruments and related products	23	1.19	3.26	-0.22	2.75	-2.07	-0.51	-1.85	
Miscellaneous manufacturing industries	24	0.39	0.92	1.32	4.60	2.19	3.68	0.87	
NonDurable Goods	25	13.53	1.41	1.23	3.48	1.24	2.07	0.00	
Food and kindred products	26	3.61	1.40	2.56	2.12	-3.35	0.72	-5.91	
Tobacco manufactures	27	0.32	3.58	-1.13	1.38	-16.68	-2.21	-15.55	
Textile mill products	28	0.64	2.35	3.04	4.42	1.42	2.07	-1.62	
Apparel and textile products	29	0.60	2.14	2.43	6.88	3.18	4.74	0.75	
Paper and allied products	30	1.28	1.44	-0.11	1.37	2.78	-0.07	2.89	
Printing and publishing	31	1.58	-0.97	-2.72	1.64	-1.19	2.61	1.53	
Chemicals and allied products	32	2.88	1.54	2.21	4.15	3.51	2.61	1.30	
Petroleum and coal products	33	1.37	2.07	0.49	4.06	8.92	1.98	8.43	
Rubber and miscellaneous plastic products	34	1.19	2.86	4.08	3.58	3.02	0.72	-1.06	

Industry Title	Ind. #	1987-95		1995-99		Recovery			
		Growth Rates		Growth Rates		GO			
		GO	GPO	GO	GPO	GO	GPO		
Leather and leather products	35	0.07	0.06	0.79	4.03	5.72	1.01	4.93	-3.02
Transportation, Com. and Pub. Util	36	9.33	9.81	1.77	2.00	3.14	2.37	1.37	0.36
Transportation	37	3.83	3.58	1.20	1.02	2.24	2.80	1.04	1.78
Railroad transportation	38	0.33	0.35	5.59	5.01	3.18	2.30	-2.41	-2.71
Local, interurban passenger transit	39	0.19	0.20	-2.36	-3.59	0.06	3.86	2.42	7.46
Trucking and Warehousing	40	1.71	1.36	4.06	2.02	2.01	0.38	-2.05	-1.64
Water transportation	41	0.29	0.18	1.52	2.81	3.42	2.75	1.89	-0.07
Transportation by Air	42	0.94	1.04	-4.20	0.05	2.70	5.56	6.91	5.51
Pipelines (not natural gas)	43	0.06	0.08	-0.08	-3.60	6.28	13.56	6.36	17.15
Transportation services	44	0.30	0.38	1.51	-1.33	4.71	4.31	3.20	5.64
Communications	45	2.80	3.16	4.17	4.90	6.15	2.86	1.98	-2.04
Telephone and telegraph	46	2.17	2.41	5.55	4.83	7.55	5.13	2.00	0.29
Radio and TV	47	0.63	0.75	0.09	6.42	0.85	-4.32	0.76	-10.74
Electric, gas, sanitary services	48	2.70	3.07	2.25	2.59	2.04	2.51	-0.20	-0.07
Wholesale Trade	49	6.33	7.80	3.04	2.67	4.24	7.57	1.20	4.90
Retail Trade	50	8.59	10.11	1.20	1.13	3.53	5.32	2.33	4.19
Finance and Insurance	51-57	7.85	8.32	2.34	1.59	3.55	3.86	1.21	2.27
Depository institutions	52	2.75	3.55	3.03	2.72	1.97	0.42	-1.06	-2.30
Nondepository institutions	53	0.87	0.58	4.86	1.94	2.06	0.54	-2.79	-1.41
Security and commodity brokers	54	1.36	1.59	7.13	5.68	14.47	17.82	7.34	12.14
Insurance carriers	55	2.10	1.82	0.21	1.59	-3.47	0.13	-3.67	-1.46
Insurance agents, brokers, service	56	0.59	0.72	-3.14	-4.89	2.25	-1.19	5.39	3.70
Holding, other investment offices	60	0.19	0.07	-9.51	-23.69	12.39	17.96	21.90	41.65
Services Non-Household	61-75	20.11	22.85	0.52	-0.64	1.17	-1.31	0.65	-0.67
Hotels and other lodging places	62	0.85	0.98	0.53	0.51	-1.29	-1.35	-1.82	-1.86
Personal services	63	0.68	0.70	1.50	-0.56	1.07	1.15	-0.43	1.71
Business services	64	4.09	5.04	2.80	1.03	3.98	1.80	1.19	0.77

Industry Title	Ind. #	1987-95			1995-99				
		Growth Rates		Growth Rates		Recovery			
		GO	GPO	GO	GPO	GO	GPO		
Auto repair, services, parking	65	1.00	1.01	1.24	-0.08	0.74	0.45	-0.50	0.54
Miscellaneous repair services	66	0.37	0.32	2.45	-0.56	2.46	-1.22	0.01	-0.66
Motion Pictures	67	0.46	0.36	-0.45	-2.13	-1.49	-1.44	-1.04	0.69
Amusement and recreation services	68	0.89	0.86	1.74	-0.32	0.28	1.41	-1.46	1.72
Health services	69	5.52	6.76	-0.61	-2.15	-0.26	-1.38	0.35	0.78
Legal services	70	1.08	1.44	-0.02	-0.48	1.63	0.15	1.64	0.64
Educational services	71	0.83	0.85	0.36	-0.37	-1.08	-2.37	-1.43	-2.00
Social services, Membership org.	72&73	1.56	1.46	0.18	0.34	-1.10	-2.56	-1.29	-2.90
Other services	74	2.78	3.08	-0.51	-0.80	2.38	-0.03	2.89	0.77

Table 6
Output per Hour,
BEA Gross Output minus Gross Product Originating,
1948-99, Selected Intervals, Annual Percentage Growth Rates
Ranked by Recovery Value

Industry Title	Ind. #		1987-95	1995-99	Recovery	
1. Private Industries	#2 - 57, 75		0.19	0.31	0.12	
2. Private Nonfarm	#2 - 3, 57, 75		0.18	0.38	0.20	
3. Manufacturing	#12		-0.01	0.69	0.70	
4. Mfg. minus NEM	#12 - 19, 20		0.57	2.44	1.86	
5. Durable Mfg.	#13		-0.02	-0.15	-0.13	
6. Durable minus NEM	#13 - 19, 20		0.98	2.91	1.92	
7. Non Durable Mfg.	#25		0.18	2.25	2.07	
8. Private Nonfarm Non Mfg.	#2 - 3, 13, 25, 57, 75		-0.09	-0.23	-0.13	
9. Private Nonfarm NonNEM Non Fine	#2 - 3, 19, 20, 54, 57, 60, 75		0.11	0.57	0.46	
10. Private Nonfarm NonNEM	#2 - 3, 19, 20, 57, 75		0.17	0.56	0.39	
11. Private Nonfarm NonFine	#2 - 3, 54, 57, 60, 75		0.12	0.47	0.35	
12. Private Nonfarm NonNEM NonTrade NonF	#2 - 3, 19, 20, 49, 50, 54, 57, 60, 75		0.18	0.97	0.79	
1996 GO 1996 GPO Weights Weights						
Tobacco manufactures	27	0.32	0.22	4.71	18.06	13.35
Radio and TV	47	0.63	0.75	-6.33	5.17	11.50
Leather and leather products	35	0.07	0.06	-3.24	4.72	7.96
Food and kindred products	26	3.61	1.75	-1.16	5.47	6.63
Stone, clay, and glass products	16	0.65	0.49	-2.09	2.32	4.41
Communications	45	2.80	3.16	-0.73	3.29	4.02
Apparel and textile products	29	0.60	0.40	-0.29	3.70	3.99
Textile mill products	28	0.64	0.37	-0.69	3.00	3.69
Motor vehicles and equipment	21	2.61	1.36	1.23	4.52	3.29
Miscellaneous manufacturing industries	24	0.39	0.35	-0.39	2.41	2.80
Fabricated metal industries	18	1.68	1.37	-0.36	2.41	2.78
Other services	74	2.78	3.08	0.29	2.41	2.12
NonDurable Goods	25	13.53	8.36	0.18	2.25	2.07
Water transportation	41	0.29	0.18	-1.29	0.67	1.96
Rubber and miscellaneous plastic products	34	1.19	0.73	-1.22	0.56	1.78
Telephone and telegraph	46	2.17	2.41	0.72	2.42	1.70
Insurance agents, brokers, service	56	0.59	0.72	1.74	3.44	1.69
Social services, Membership org..	72 & 73	1.56	1.46	-0.15	1.46	1.61
Lumber and wood products	14	0.85	0.59	2.29	3.71	1.42
Transportation by Air	42	0.94	1.04	-4.25	-2.85	1.40
Other transportation equipment	22	1.09	0.76	2.39	3.77	1.37
Instruments and related products	23	1.19	0.79	3.48	4.82	1.33
Services Non-Households	61 - 75	20.11	22.85	1.16	2.48	1.32

Industry Title	Ind. #			1987-95	1995-99	Recovery
Chemicals and allied products	32	2.88	2.26	-0.67	0.64	1.31
Furniture and fixtures	15	0.44	0.30	0.56	1.81	1.25
Depository institutions	52	2.75	3.55	0.32	1.55	1.23
Construction	11	4.45	4.66	-0.98	0.13	1.11
Printing and publishing	31	1.58	1.30	1.75	2.83	1.08
Transportation and public utilities	36	9.33	9.81	-0.24	0.78	1.01
Legal services	70	1.08	1.44	0.47	1.47	1.01
Oil and gas extraction	9	1.04	1.27	-1.36	-0.38	0.98
Manufacturing	12	29.36	19.37	-0.01	0.69	0.70
Miscellaneous repair services	66	0.37	0.32	3.01	3.68	0.67
Educational services	71	0.83	0.85	0.73	1.29	0.56
Domestic Industries	1	108.82	115.02	0.19	0.71	0.52
Business services	64	4.09	5.04	1.77	2.19	0.42
Railroad transportation	38	0.33	0.35	0.58	0.88	0.30
Private Industries	2	100.00	100.00	0.20	0.37	0.18
Hotels and other lodging places	62	0.85	0.98	0.02	0.06	0.04
Private households	75	0.10	0.18	0.00	0.00	0.00
Electric, gas, sanitary services	48	2.70	3.07	-0.34	-0.47	-0.13
Durable Goods	13	15.83	11.02	-0.02	-0.15	-0.13
Real Estate	57	10.17	12.83	0.57	0.34	-0.22
Trucking and Warehousing	40	1.71	1.36	2.04	1.63	-0.41
Health services	69	5.52	6.76	1.55	1.12	-0.43
Mining	6	1.50	1.66	-1.01	-1.49	-0.47
Finance and Insurance	51 - 57	7.85	8.32	0.75	-0.31	-1.06
Transportation	37	3.83	3.58	0.18	-0.56	-0.74
Agriculture services, forestry, fisheries	5	0.45	0.56	1.30	0.41	-0.90
Auto repair, services, parking	65	1.00	1.01	1.33	0.28	-1.04
Nondepository institutions	53	0.87	0.58	2.91	1.53	-1.38
Motion Pictures	67	0.46	0.36	1.68	-0.05	-1.73
Retail Trade	50	8.59	10.11	0.07	-1.79	-1.86
Primary metal industries	17	1.43	0.75	0.08	-1.85	-1.92
Coal mining	8	0.22	0.16	-2.77	-4.81	-2.04
Personal services	63	0.68	0.70	2.06	-0.08	-2.14
Insurance carriers	55	2.10	1.82	-1.38	-3.60	-2.21
Electric Equip..	20	2.52	2.26	-1.66	-3.93	-2.27
Transportation services	44	0.30	0.38	2.84	0.40	-2.44
Agriculture, forestry, fisheries	3	2.23	1.92	0.68	-1.85	-2.53
Paper and allied products	30	1.28	0.82	1.55	-1.41	-2.96
Amusement and recreation services	68	0.89	0.86	2.06	-1.12	-3.18
Farms	4	1.79	1.36	0.74	-2.63	-3.37
Nonmetallic minerals, except fuels	10	0.14	0.15	0.73	-2.81	-3.55
Machinery (except elect)	19	2.98	2.01	0.35	-3.35	-3.70
Wholesale Trade	49	6.33	7.80	0.37	-3.33	-3.70
Security and commodity brokers	54	1.36	1.59	1.45	-3.35	-4.80
Local, interurban passenger transit	39	0.19	0.20	1.24	-3.80	-5.04
Petroleum and coal products	33	1.37	0.44	1.59	-4.87	-6.45
Metal mining	7	0.10	0.09	-0.24	-10.96	-10.72
Pipelines (not natural gas)	43	0.06	0.08	3.52	-7.28	-10.79
Holding, other investment offices	60	0.19	0.07	14.18	-5.57	-19.75

Table 7

**BEA Gross Product Originating and Gross Output
Output Per Hour Recovery Values
1972-99, various periods, all Values Annual Percentage Growth Rates
Ranked by Gross Output Recovery Value**

Industry Title	Ind. #	GPO	GPO	GO
		Recovery 1995-99 vs.1972-95	Recovery 1995-99 vs.1987-95	Recovery 1995-99 vs.1987-95
Private NonFarm	#2 - 57, 75	1.22	1.46	1.66
Agriculture, forestry, and fishing	#3	-0.33	1.41	-1.12
Mining	#6	3.94	1.17	0.69
Construction	#11	-0.16	-0.65	0.46
Manufacturing	#12	1.45	1.70	2.40
Manufacturing minus NEM	#12 - 19, 20	-0.92	0.05	1.91
Durable goods	#13	3.54	2.97	2.83
Durable minus NEM	#13 - 19, 20	-0.47	0.13	2.06
Nondurable goods	#25	-1.34	0.00	2.07
Private Non-Farm Non-Mfg.	2 - 3, 12, 57, 75	1.31	1.47	1.33
Transportation, Com., and Public utilities	#36	0.04	0.36	1.37
Wholesale trade	#49	5.01	4.90	1.20
Retail trade	#50	4.21	4.19	2.33
Finance and Insurance	#51 - 57	3.82	2.45	1.91
Services Non-Households	#61 - 75	0.01	-0.67	0.65
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Domestic Industries	1	0.76	0.90	1.42
Private Industries	2	1.01	1.11	1.28
Agriculture, forestry, fisheries	3	-0.33	1.41	-1.12
Farms	4	0.28	1.56	-1.80
Agriculture services, forestry, fisheries	5	-1.00	0.96	0.07
Mining	6	3.94	1.17	0.69
Metal mining	7	10.35	11.93	1.21
Coal mining	8	6.53	2.50	0.46
Oil and gas extraction	9	3.75	-0.50	0.48
Nonmetallic minerals, except fuels	10	4.23	6.20	2.66
Construction	11	-0.16	-0.65	0.46
Manufacturing	12	1.45	1.70	2.40
Durable Goods	13	3.54	2.97	2.83
Lumber and wood products	14	-2.81	1.45	2.86
Furniture and fixtures	15	-0.06	0.89	2.14
Stone, clay, and glass products	16	0.17	-0.94	3.47
Primary metal industries	17	3.81	2.80	0.88
Fabricated metal industries	18	-1.90	-1.31	1.46
Machinery (except elect)	19	7.61	6.93	3.24
Electric Equip..	20	10.89	6.75	4.49
Motor vehicles and equipment	21	-0.95	-0.31	2.98
Other transportation equipment	22	1.15	2.71	4.08
Instruments and related products	23	-1.70	-1.85	-0.51
Miscellaneous manufacturing industries	24	-0.06	0.87	3.68

Industry Title	Ind. #	GPO	GPO	GO
		Recovery 1995-99 vs.1972-95	Recovery 1995-99 vs.1987-95	Recovery 1995-99 vs.1987-95
NonDurable Goods	25	-1.34	0.00	2.07
Food and kindred products	26	-6.64	-5.91	0.72
Tobacco manufactures	27	-14.49	-15.55	-2.21
Textile mill products	28	-2.97	-1.62	2.07
Apparel and textile products	29	-0.05	0.75	4.74
Paper and allied products	30	1.04	2.89	-0.07
Printing and publishing	31	-0.31	1.53	2.61
Chemicals and allied products	32	0.45	1.30	2.61
Petroleum and coal products	33	3.68	8.43	1.98
Rubber and miscellaneous plastic products	34	-0.52	-1.06	0.72
Leather and leather products	35	-2.78	-3.02	4.93
Transportation, Com. and Pub. Util.	36	0.04	0.36	1.37
Transportation	37	0.99	1.78	1.04
Railroad transportation	38	-4.67	-2.71	-2.41
Local, interurban passenger transit	39	6.24	7.46	2.42
Trucking and Warehousing	40	-1.29	-1.64	-2.05
Water transportation	41	0.52	-0.07	1.89
Transportation by Air	42	3.67	5.51	6.91
Pipelines (not natural gas)	43	14.22	17.15	6.36
Transportation services	44	4.31	5.64	3.20
Communications	45	-1.90	-2.04	1.98
Telephone and telegraph	46	-0.43	0.29	2.00
Radio and TV	47	-5.47	-10.74	0.76
Electric, gas, sanitary services	48	1.12	-0.07	-0.20
Wholesale Trade	49	5.01	4.90	1.20
Retail Trade	50	4.21	4.19	2.33
Finance and Insurance	51 - 57	3.82	2.16	1.21
Depository institutions	52	0.26	-2.30	-1.06
Nondepository institutions	53	-4.30	-1.41	-2.79
Security and commodity brokers	54	14.67	12.14	7.34
Insurance carriers	55	1.40	-1.46	-3.67
Insurance agents, brokers, service	56	0.85	3.70	5.39
Holding, other investment offices	60	25.80	41.65	21.90
Services Non-Households	61 - 75	0.01	-0.67	0.65
Hotels and other lodging places	62	-1.41	-1.86	-1.82
Personal services	63	1.93	1.71	-0.43
Business services	64	0.89	0.77	1.19
Auto repair, services, parking	65	0.53	0.54	-0.50
Miscellaneous repair services	66	-0.98	-0.66	0.01
Motion Pictures	67	-1.75	0.69	-1.04
Amusement and recreation services	68	0.65	1.72	-1.46
Health services	69	-0.28	0.78	0.35
Legal services	70	2.43	0.64	1.64
Educational services	71	-2.33	-2.00	-1.43
Social services, Membership org.	72 & 73	-2.52	-2.90	-1.29
Other services	74	1.75	0.77	2.89

Table 8

Output per Hour
Gross Output, Gross Product Originating, and Intermediate Materials
Selected Intervals, 1987-99, Differences in Annual Percentage Growth Rates
Ranked By Recovery of Nom INT-GO

Industry Title	Ind. #	1987-95 Growth Rates						1995-99 Growth Rates						Recovery		
		Real GO-	Nom INT-	GO Def. INT	Real GO-	Nom INT-	GO Def. INT	Real GPO	Nom GO	GO Def. Def.	Real GPO	Nom GO	GO Def. Def.	Nom INT-	GO GO	GO Def. Def.
1. Private Industries	#2 - 57, 75	0.19	0.00	0.21	0.31	0.29	0.12	-0.54	0.29	0.12	-0.54	0.08	-0.54	0.12	-0.54	0.08
2. Private Nonfarm	#2 - 3, 57, 75	0.18	0.00	0.23	0.38	2.09	0.20	-0.55	2.09	0.20	-0.55	1.86	-0.55	0.20	-0.55	1.86
3. Manufacturing	#12	-0.01	-0.03	0.01	0.69	0.56	0.70	0.13	0.56	0.70	0.16	0.55	0.13	0.70	0.16	0.55
4. Mfg. minus NEM	#12 - 19, 20	0.57	-2.35	1.53	2.44	-0.42	1.86	-1.65	-0.42	1.86	0.69	-1.95	-1.65	-0.42	1.86	0.69
5. Durable Mfg.	#13	-0.02	0.59	-0.60	-0.15	0.36	-0.13	0.36	-0.51	-0.13	-0.23	0.10	-0.23	-0.13	-0.23	0.10
6. Durable minus NEM	#13 - 19, 20	0.98	-1.12	-1.28	2.91	-0.44	1.92	0.47	-0.44	1.92	1.58	0.84	0.47	1.92	1.58	0.84
7. Non Durable Mfg.	#25	0.18	-0.28	0.33	2.25	0.85	2.07	-0.01	0.85	2.07	0.27	0.52	-0.01	0.85	2.07	0.52
8. Private Nonfarm Non Mfg.	#2 - 3, 13, 25, 57, 75	-0.09	-0.23	0.22	-0.23	0.16	-0.13	-0.86	0.16	-0.13	-0.63	-0.06	-0.86	0.16	-0.63	-0.06
9. Private Nonfarm NonNEM Non Finc	#2 - 3, 19, 20, 54, 57, 60, 75	0.11	-0.17	0.35	0.57	0.71	0.46	-0.55	0.71	0.46	-0.38	0.36	-0.55	0.71	0.46	-0.38
10. Private Nonfarm NonNEM	#2 - 3, 19, 20, 57, 75	0.17	-0.12	0.34	0.56	0.59	0.39	-0.58	0.59	0.39	-0.47	0.25	-0.58	0.59	0.39	-0.47
11. Private Nonfarm NonFinc	#2 - 3, 54, 57, 60, 75	0.12	-0.08	0.26	0.47	0.58	0.35	-0.50	0.58	0.35	-0.43	0.32	-0.50	0.58	0.35	-0.43
12. Private Nonfarm NonNEM NonTrade NonFinc	#2 - 3, 19, 20, 49, 50, 54, 57, 60, 75	0.18	-0.33	0.68	0.97	2.03	0.79	-0.68	2.03	0.79	-0.35	1.34	-0.68	0.79	-0.35	1.34
Radio and TV	47	-6.33	-5.02	0.40.	5.17	3.83	11.50	3.83	1.80	11.50	8.85	1.40	3.83	11.50	8.85	1.40
Leather and leather products	35	-3.24	-4.22	0.26	4.72	4.31	7.96	4.31	1.82	7.96	8.52	1.56	4.31	7.96	8.52	1.56
Communications	45	-0.73	-0.33	-0.47	3.29	3.27	4.02	3.27	-0.13	4.02	3.60	0.34	3.27	-0.13	4.02	3.60
Petroleum and coal products	33	1.59	-1.70	3.46	-4.87	1.84	-6.45	1.84	-7.51	-6.45	3.54	#####	1.84	-7.51	-6.45	3.54
Motor vehicles and equipment	21	1.23	-0.81	1.48	4.52	2.23	3.29	2.23	2.36	3.29	3.04	0.88	2.23	3.29	3.04	0.88
Stone, clay, and glass products	16	-2.09	-1.52	-0.49	2.32	1.17	4.41	1.17	1.27	4.41	2.69	1.76	1.17	4.41	2.69	1.76
Insurance agents, brokers, service	56	1.74	-0.33	2.06	3.44	2.00	1.69	2.00	0.92	1.69	2.33	-1.14	2.00	0.92	1.69	2.33
Food and kindred products	26	-1.16	-1.33	0.12	5.47	0.82	6.63	0.82	4.63	6.63	2.15	4.51	0.82	6.63	2.15	4.51

Industry Title	Ind. #	1987-95 Growth Rates						1995-99 Growth Rates						Recovery							
		Real		Nom		GO Def.		Real		Nom		GO Def.		Nom	GO Def.						
		GO- GPO	INT- GO	GO Def.	INT- GO	GO Def.	GO Def.	GO- GPO	INT- GO	GO Def.	INT- GO	GO Def.	GO Def.	GO Def.	GO Def.						
Other services	74	0.29	-0.38	0.72	2.41	2.41	1.62	0.75	2.12	2.00	0.04	-0.67	-1.54	0.87	0.64	0.33	0.28	1.31	1.86	-0.58	
Chemicals and allied products	32	2.91	4.22	-0.24	1.53	5.96	3.13	-4.81	-1.38	1.74	-4.57	0.72	1.47	-0.65	2.42	3.13	-0.88	1.70	1.66	-0.24	
Nondepository institutions	53	-0.29	0.15	-0.42	3.70	1.80	1.80	1.63	3.99	1.65	2.05	0.47	-0.04	0.70	1.47	1.48	0.51	1.01	1.51	-0.19	
Telephone and telegraph	46	-0.39	-0.29	-0.06	2.41	1.17	1.21	2.80	1.45	1.26	2.29	1.80	0.92	3.71	3.13	0.55	1.42	1.33	-0.37		
Apparel and textile products	29	-0.34	-0.85	0.48	-0.47	0.44	-1.02	-0.13	1.30	-1.50	0.24	0.02	-0.25	0.78	1.06	-0.31	1.01	1.04	-0.06		
Legal services	70	0.18	-0.74	0.88	2.25	-0.03	2.25	2.07	0.71	1.37	Miscellaneous manufacturing industries	24	-0.39	-0.29	-0.06	2.41	1.17	1.21	2.80	1.45	1.26
		4.71	0.79	3.79	18.06	1.36	15.73	13.35	0.57	11.95	Lumber and wood products	14	2.29	1.80	0.92	3.71	3.13	0.55	1.42	1.33	-0.37
		0.32	-0.02	0.46	1.55	0.52	1.05	1.23	0.54	0.59	Electric, gas, sanitary services	48	-0.34	-0.85	0.48	-0.47	0.44	-1.02	-0.13	1.30	-1.50
		-0.15	-0.63	0.45	1.46	-0.27	1.60	1.61	0.36	1.14	Transportation and public utilities	36	-0.24	0.02	-0.25	0.78	1.06	-0.31	1.01	1.04	-0.06
		2.39	1.97	0.65	3.77	2.29	1.12	1.37	0.31	0.48	NonDurable Goods	25	0.18	-0.74	0.88	2.25	-0.03	2.25	2.07	0.71	1.37
		-1.36	-0.73	-0.44	-0.38	-0.48	0.09	0.98	0.24	0.52	Tobacco manufactures	27	4.71	0.79	3.79	18.06	1.36	15.73	13.35	0.57	11.95
		-0.01	-0.03	0.01	0.69	0.13	0.56	0.70	0.16	0.55	Depository institutions	52	0.32	-0.02	0.46	1.55	0.52	1.05	1.23	0.54	0.59
		-0.36	-0.07	-0.31	2.41	-0.06	2.38	2.78	0.01	2.69	Social services, Membership org.	72&73	-0.15	-0.63	0.45	1.46	-0.27	1.60	1.61	0.36	1.14
		1.55	0.45	1.12	1.12	0.27	0.79	-0.43	-0.18	-0.33	Other transportation equipment	22	2.39	1.97	0.65	3.77	2.29	1.12	1.37	0.31	0.48
		0.75	-0.06	-0.62	-0.31	-0.28	-0.30	-1.06	-0.22	0.32	Oil and gas extraction	9	-1.36	-0.73	-0.44	-0.38	-0.48	0.09	0.98	0.24	0.52
		-0.02	0.59	-0.60	-0.15	0.36	-0.51	-0.13	-0.23	0.10	Manufacturing	12	-0.01	-0.03	0.01	0.69	0.13	0.56	0.70	0.16	0.55
		-1.29	0.19	-1.60	0.67	-0.05	0.83	1.96	-0.24	2.44	Fabricated metal industries	18	-0.36	-0.07	-0.31	2.41	-0.06	2.38	2.78	0.01	2.69
		0.08	-0.37	0.43	-1.85	-0.64	-1.33	-1.92	-0.27	-1.76	Health services	69	1.55	0.45	1.12	1.12	0.27	0.79	-0.43	-0.18	-0.33
		1.16	0.46	0.79	2.48	0.20	1.12	1.32	-0.27	0.33	Finance and Insurance	51-57	0.75	-0.06	-0.62	-0.31	-0.28	-0.30	-1.06	-0.22	0.32
		0.73	-0.07	0.81	1.29	-0.34	1.69	0.56	-0.27	0.88	Durable Goods	13	-0.02	0.59	-0.60	-0.15	0.36	-0.51	-0.13	-0.23	0.10
		0.19	0.05	0.29	0.71	-0.27	0.48	0.52	-0.31	0.20	Water transportation	41	-1.29	0.19	-1.60	0.67	-0.05	0.83	1.96	-0.24	2.44
		0.20	0.01	0.23	0.37	-0.40	0.45	0.18	-0.42	0.22	Primary metal industries	17	0.08	-0.37	0.43	-1.85	-0.64	-1.33	-1.92	-0.27	-1.76
		-4.25	-2.63	-0.43	-2.85	-3.09	-0.17	1.40	-0.46	0.26	Services Non Households	61-75	1.16	0.46	0.79	2.48	0.20	1.12	1.32	-0.27	0.33
		-0.98	-0.71	-0.18	0.13	-1.20	1.30	1.11	-0.49	1.48	Educational services	71	0.73	-0.07	0.81	1.29	-0.34	1.69	0.56	-0.27	0.88
		-1.66	0.71	-2.69	-3.93	0.04	-4.14	-2.27	-0.67	-1.45	Domestic Industries	1	0.19	0.05	0.29	0.71	-0.27	0.48	0.52	-0.31	0.20
		0.74	1.72	-1.11	-2.63	0.76	-3.14	-3.37	-0.95	-2.03	Private Industries	2	0.20	0.01	0.23	0.37	-0.40	0.45	0.18	-0.42	0.22
											Transportation by Air	42	-4.25	-2.63	-0.43	-2.85	-3.09	-0.17	1.40	-0.46	0.26
											Construction	11	-0.98	-0.71	-0.18	0.13	-1.20	1.30	1.11	-0.49	1.48
											Electric Equip..	20	-1.66	0.71	-2.69	-3.93	0.04	-4.14	-2.27	-0.67	-1.45
											Farms	4	0.74	1.72	-1.11	-2.63	0.76	-3.14	-3.37	-0.95	-2.03

Industry Title	Ind. #	1987-95 Growth Rates						1995-99 Growth Rates						Recovery	
		Real		Nom		GO Def.		Real		Nom		GO Def.		Real	GO Def.
		GO-	INT-	GO	INT-	GO	Def.	GO-	INT-	GO	INT-	GO	Def.	GO	Def.
Hotels and other lodging places	62	0.02	-0.46	0.47	0.47	0.06	-1.43	1.46	0.04	-0.98	0.99	0.99	0.04	-0.98	0.99
Business services	64	1.77	1.49	0.56	0.56	2.19	0.42	1.72	0.42	-1.07	1.16	1.16	0.42	-1.07	1.16
Furniture and fixtures	15	0.56	0.67	-0.09	-0.09	1.81	-0.46	2.21	1.25	-1.13	2.31	2.31	1.25	-1.13	2.31
Paper and allied products	30	1.55	0.29	1.20	1.20	-1.41	-0.84	-0.58	-2.96	-1.13	-1.78	-1.78	-2.96	-1.13	-1.78
Textile mill products	28	-0.69	0.38	-1.10	-1.10	3.00	-0.97	3.92	3.69	-1.35	5.02	5.02	3.69	-1.35	5.02
Security and commodity brokers	54	1.45	1.94	-0.84	-0.84	-3.35	0.57	-3.01	-4.80	-1.36	-2.17	-2.17	-4.80	-1.36	-2.17
Auto repair, services, parking	65	1.33	0.76	0.74	0.74	0.28	-0.65	0.94	-1.04	-1.40	0.20	0.20	-1.04	-1.40	0.20
Mining	6	-1.01	0.04	-0.90	-0.90	-1.49	-1.46	-0.13	-0.47	-1.50	0.77	0.77	-0.47	-1.50	0.77
Retail Trade	50	0.07	0.22	-0.15	-0.15	-1.79	-1.30	-0.53	-1.86	-1.52	-0.38	-0.38	-1.86	-1.52	-0.38
Rubber and miscellaneous plastic products	34	-1.22	0.86	-2.07	-2.07	0.56	-0.69	1.26	1.78	-1.55	3.33	3.33	1.78	-1.55	3.33
Railroad transportation	38	0.58	3.01	-1.98	-1.98	0.88	1.44	-0.60	0.30	-1.57	1.38	1.38	0.30	-1.57	1.38
Printing and publishing	31	1.75	0.57	1.25	1.25	2.83	-1.03	3.75	1.08	-1.60	2.51	2.51	1.08	-1.60	2.51
Agriculture, forestry, fisheries	3	0.68	1.27	-0.62	-0.62	-1.85	-0.52	-1.23	-2.53	-1.79	-0.61	-0.61	-2.53	-1.79	-0.61
Transportation	37	0.18	1.03	-0.75	-0.75	-0.56	-0.82	0.23	-0.74	-1.85	0.98	0.98	-0.74	-1.85	0.98
Miscellaneous repair services	66	3.01	1.37	1.90	1.90	3.68	-0.55	4.22	0.67	-1.92	2.32	2.32	0.67	-1.92	2.32
Motion Pictures	67	1.68	1.72	0.05	0.05	-0.05	-0.59	0.56	-1.73	-2.30	0.51	0.51	-1.73	-2.30	0.51
Personal services	63	2.06	1.94	0.62	0.62	-0.08	-0.58	0.50	-2.14	-2.52	-0.12	-0.12	-2.14	-2.52	-0.12
Machinery (except elect)	19	0.35	2.51	-2.18	-2.18	-3.35	-0.08	-3.41	-3.70	-2.59	-1.22	-1.22	-3.70	-2.59	-1.22
Agriculture services, forestry, fisheries	5	1.30	1.72	0.00	0.00	0.41	-0.92	1.40	-0.90	-2.64	1.40	1.40	-0.90	-2.64	1.40
Insurance carriers	55	-1.38	-3.29	2.28	2.28	-3.60	-6.10	1.47	-2.21	-2.81	-0.82	-0.82	-2.21	-2.81	-0.82
Wholesale Trade	49	0.37	0.40	-0.06	-0.06	-3.33	-2.42	-1.11	-3.70	-2.81	-1.05	-1.05	-3.70	-2.81	-1.05
Transportation services	44	2.84	3.99	0.09	0.09	0.40	0.97	-0.65	-2.44	-3.02	-0.74	-0.74	-2.44	-3.02	-0.74
Instruments and related products	23	3.48	0.75	2.80	2.80	4.82	-2.63	7.25	1.33	-3.38	4.44	4.44	1.33	-3.38	4.44
Trucking and Warehousing	40	2.04	3.84	-1.00	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56	2.56	-0.41	-3.75	2.56
Coal mining	8	-2.77	2.48	-5.16	-5.16	-4.81	-1.44	-3.32	-2.04	-3.92	1.84	1.84	-2.04	-3.92	1.84
Amusement and recreation services	68	2.06	2.04	0.47	0.47	-1.12	-2.05	0.79	-3.18	-4.10	0.32	0.32	-3.18	-4.10	0.32
Nonmetallic minerals, except fuels	10	0.73	1.13	-0.33	-0.33	-2.81	-3.28	0.42	-3.55	-4.41	0.75	0.75	-3.55	-4.41	0.75
Metal mining	7	-0.24	0.95	-0.87	-0.87	#####	-3.74	-8.07	#####	-4.70	-7.21	-7.21	#####	-4.70	-7.21
Local, interurban passenger transit	39	1.24	0.27	0.82	0.82	-3.80	-5.23	0.51	-5.04	-5.50	-0.32	-0.32	-5.04	-5.50	-0.32
Pipelines (not natural gas)	43	3.52	4.74	-0.19	-0.19	-7.28	-6.84	-1.34	#####	#####	-1.15	-1.15	#####	#####	-1.15
Holding, other investment offices	60	14.18	39.87	7.97	7.97	-5.57	#####	13.49	#####	#####	5.52	5.52	#####	#####	5.52

Table 9

Output per Hour
Gross Output, Gross Product Originating, and Intermediate Materials
Selected Intervals, 1987-99, Differences in Annual Percentage Growth Rates
Ranked By Recovery of GO Deflator - INT Deflator

Industry Title	Ind. #	1987-95 Growth Rates						1995-99 Growth Rates						Recovery																							
		Real			Nom			Real			Nom			Real			Nom																				
		GO-	GPO	GO	INT-	GO	INT-	GO-	GPO	GO	INT-	GO	INT-	GO-	GPO	GO	INT-	GO	INT-	GO	INT-																
1. Private Industries	#2 - 57, 75	0.19	0.00	0.21	0.31	-0.54	0.29	0.12	-0.54	0.12	-0.54	0.08	0.18	0.00	0.23	0.38	-0.55	2.09	0.20	-0.55	1.86	0.01	-0.03	0.01	0.69	0.13	0.56	0.70	0.16	0.55							
2. Private Nonfarm	#2 - 3, 57, 75	-0.01	-0.03	0.01	0.69	0.13	0.56	0.70	0.16	0.55	1.86	0.01	-0.03	0.01	0.69	0.13	0.56	0.70	0.16	0.55	1.86	0.01	-0.03	0.01	0.69	0.13	0.56	0.70	0.16	0.55							
3. Manufacturing	#12	-0.02	-0.59	-0.60	-0.15	0.36	-0.51	-0.13	-0.23	0.10	0.98	-1.12	-1.28	2.91	0.47	-0.44	1.92	1.58	0.84	0.18	-0.28	0.33	2.25	-0.01	0.85	2.07	0.27	0.52	-0.09	-0.23	0.22	-0.23	-0.86	0.16	-0.13	-0.63	-0.06
4. Mfg. minus NEM	#13	0.11	-0.17	0.35	0.57	-0.55	0.71	0.46	-0.38	0.36	0.17	-0.12	0.34	0.56	-0.58	0.59	0.39	-0.47	0.25	0.12	-0.08	0.26	0.47	-0.50	0.58	0.35	-0.43	0.32	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34
5. Durable Mfg.	#13 - 19, 20	0.18	0.00	0.21	0.31	-0.54	0.29	0.12	-0.54	0.08	0.18	-0.28	0.33	2.25	-0.01	0.85	2.07	0.27	0.52	0.18	-0.28	0.33	2.25	-0.01	0.85	2.07	0.27	0.52	-0.09	-0.23	0.22	-0.23	-0.86	0.16	-0.13	-0.63	-0.06
6. Durable minus NEM	#25	0.11	-0.17	0.35	0.57	-0.55	0.71	0.46	-0.38	0.36	0.17	-0.12	0.34	0.56	-0.58	0.59	0.39	-0.47	0.25	0.12	-0.08	0.26	0.47	-0.50	0.58	0.35	-0.43	0.32	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34
7. Non Durable Mfg.	#2 - 3, 13, 25, 57, 75	0.11	-0.17	0.35	0.57	-0.55	0.71	0.46	-0.38	0.36	0.17	-0.12	0.34	0.56	-0.58	0.59	0.39	-0.47	0.25	0.12	-0.08	0.26	0.47	-0.50	0.58	0.35	-0.43	0.32	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34
8. Private Nonfarm Non Mfg.	#2 - 3, 19, 20, 54, 57, 60, 75	0.17	-0.12	0.34	0.56	-0.58	0.59	0.39	-0.47	0.25	0.12	-0.08	0.26	0.47	-0.50	0.58	0.35	-0.43	0.32	0.18	-0.08	0.26	0.47	-0.50	0.58	0.35	-0.43	0.32	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34
9. Private Nonfarm NonNEM Non Fine	#2 - 3, 19, 20, 57, 75	0.12	-0.08	0.26	0.47	-0.50	0.58	0.35	-0.43	0.32	0.18	-0.08	0.26	0.47	-0.50	0.58	0.35	-0.43	0.32	0.18	-0.08	0.26	0.47	-0.50	0.58	0.35	-0.43	0.32	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34
10. Private Nonfarm NonNEM	#2 - 3, 54, 57, 60, 75	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34
11. Private Nonfarm NonFin	#2 - 3, 19, 20, 49, 50, 54, 57, 60, 7	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34
12. Private Nonfarm NonNEM NonTrade NonFin	#2 - 3, 19, 20, 49, 50, 54, 57, 60, 7	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34	0.18	-0.33	0.68	0.97	-0.68	2.03	0.79	-0.35	1.34
Tobacco manufactures	27	4.71	0.79	3.79	18.06	1.36	15.73	13.35	0.57	11.95	14.18	39.87	7.97	-5.57	###	13.49	###	###	5.52	-0.69	0.38	-1.10	3.00	-0.97	3.92	3.69	-1.35	5.02	-1.16	-1.33	0.12	5.47	0.82	4.63	2.15	4.51	
Holding, other investment offices	60	3.48	0.75	2.80	4.82	-2.63	7.25	1.33	-3.38	4.44	-1.22	0.86	-2.07	0.56	-0.69	1.26	1.78	-1.55	3.33	-0.36	-0.07	-0.31	2.41	-0.06	2.38	2.78	0.01	2.69	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56
Textile mill products	28	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56
Food and kindred products	26	3.48	0.75	2.80	4.82	-2.63	7.25	1.33	-3.38	4.44	-1.22	0.86	-2.07	0.56	-0.69	1.26	1.78	-1.55	3.33	-0.36	-0.07	-0.31	2.41	-0.06	2.38	2.78	0.01	2.69	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56
Instruments and related products	23	-1.22	0.86	-2.07	0.56	-0.69	1.26	1.78	-1.55	3.33	-0.36	-0.07	-0.31	2.41	-0.06	2.38	2.78	0.01	2.69	-0.36	-0.07	-0.31	2.41	-0.06	2.38	2.78	0.01	2.69	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56
Rubber and miscellaneous plastic products	34	-0.36	-0.07	-0.31	2.41	-0.06	2.38	2.78	0.01	2.69	-0.36	-0.07	-0.31	2.41	-0.06	2.38	2.78	0.01	2.69	-0.36	-0.07	-0.31	2.41	-0.06	2.38	2.78	0.01	2.69	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56
Fabricated metal industries	18	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56
Trucking and Warehousing	40	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56	2.04	3.84	-1.00	1.63	0.09	1.56	-0.41	-3.75	2.56

Industry Title	Ind. #	1987-95 Growth Rates						1995-99 Growth Rates						Recovery								
		Real			INT			Real			GO			Real			GO					
		GO-	INT-	Nom	Def.-	GO	Def.	GO-	INT-	Nom	Def.-	GO	Def.	GO-	INT-	Nom	Def.-	GO	INT-	Nom	Def.-	
Printing and publishing	31	1.75	0.57	1.25	2.83	-1.03	3.75	1.08	-1.60	2.51	1.08	-1.60	2.51	1.08	-1.60	2.51	1.08	-1.60	2.51	1.08	-1.60	2.51
Water transportation	41	-1.29	0.19	-1.60	0.67	-0.05	0.83	1.96	-0.24	2.44	1.96	-0.24	2.44	1.96	-0.24	2.44	1.96	-0.24	2.44	1.96	-0.24	2.44
Miscellaneous repair services	66	3.01	1.37	1.90	3.68	-0.55	4.22	0.67	-1.92	2.32	0.67	-1.92	2.32	0.67	-1.92	2.32	0.67	-1.92	2.32	0.67	-1.92	2.32
Furniture and fixtures	15	0.56	0.67	-0.09	1.81	-0.46	2.21	1.25	-1.13	2.31	1.25	-1.13	2.31	1.25	-1.13	2.31	1.25	-1.13	2.31	1.25	-1.13	2.31
Apparel and textile products	29	-0.29	0.15	-0.42	3.70	1.80	1.63	3.99	1.65	2.05	3.99	1.65	2.05	3.99	1.65	2.05	3.99	1.65	2.05	3.99	1.65	2.05
Coal mining	8	-2.77	2.48	-5.16	-4.81	-1.44	-3.32	-2.04	-3.92	1.84	-2.04	-3.92	1.84	-2.04	-3.92	1.84	-2.04	-3.92	1.84	-2.04	-3.92	1.84
Stone, clay, and glass products	16	-2.09	-1.52	-0.49	2.32	1.17	1.27	4.41	2.69	1.76	4.41	2.69	1.76	4.41	2.69	1.76	4.41	2.69	1.76	4.41	2.69	1.76
Leather and leather products	35	-3.24	-4.22	0.26	4.72	4.31	1.82	7.96	8.52	1.56	7.96	8.52	1.56	7.96	8.52	1.56	7.96	8.52	1.56	7.96	8.52	1.56
Construction	11	-0.98	-0.71	-0.18	0.13	-1.20	1.30	1.11	-0.49	1.48	1.11	-0.49	1.48	1.11	-0.49	1.48	1.11	-0.49	1.48	1.11	-0.49	1.48
Radio and TV	47	-6.33	-5.02	0.40	5.17	3.83	1.80	11.50	8.85	1.40	11.50	8.85	1.40	11.50	8.85	1.40	11.50	8.85	1.40	11.50	8.85	1.40
Agriculture services, forestry, fisheries	5	1.30	1.72	0.00	0.41	-0.92	1.40	-0.90	-2.64	1.40	-0.90	-2.64	1.40	-0.90	-2.64	1.40	-0.90	-2.64	1.40	-0.90	-2.64	1.40
Railroad transportation	38	0.58	3.01	-1.98	0.88	1.44	-0.60	0.30	-1.57	1.38	0.30	-1.57	1.38	0.30	-1.57	1.38	0.30	-1.57	1.38	0.30	-1.57	1.38
NonDurable Goods	25	0.18	-0.74	0.88	2.25	-0.03	2.25	2.07	0.71	1.37	2.07	0.71	1.37	2.07	0.71	1.37	2.07	0.71	1.37	2.07	0.71	1.37
Miscellaneous manufacturing industries	24	-0.39	-0.29	-0.06	2.41	1.17	1.21	2.80	1.45	1.26	2.80	1.45	1.26	2.80	1.45	1.26	2.80	1.45	1.26	2.80	1.45	1.26
Business services	64	1.77	1.49	0.56	2.19	0.42	1.72	0.42	-1.07	1.16	0.42	-1.07	1.16	0.42	-1.07	1.16	0.42	-1.07	1.16	0.42	-1.07	1.16
Social services, Membership org.	72&73	-0.15	-0.63	0.45	1.46	-0.27	1.60	1.61	0.36	1.14	1.61	0.36	1.14	1.61	0.36	1.14	1.61	0.36	1.14	1.61	0.36	1.14
Hotels and other lodging places	62	0.02	-0.46	0.47	0.06	-1.43	1.46	0.04	-0.98	0.99	0.04	-0.98	0.99	0.04	-0.98	0.99	0.04	-0.98	0.99	0.04	-0.98	0.99
Transportation	37	0.18	1.03	-0.75	-0.56	-0.82	0.23	-0.74	-1.85	0.98	-0.74	-1.85	0.98	-0.74	-1.85	0.98	-0.74	-1.85	0.98	-0.74	-1.85	0.98
Educational services	71	0.73	-0.07	0.81	1.29	-0.34	1.69	0.56	-0.27	0.88	0.56	-0.27	0.88	0.56	-0.27	0.88	0.56	-0.27	0.88	0.56	-0.27	0.88
Motor vehicles and equipment	21	1.23	-0.81	1.48	4.52	2.23	2.36	3.29	3.04	0.88	3.29	3.04	0.88	3.29	3.04	0.88	3.29	3.04	0.88	3.29	3.04	0.88
Mining	6	-1.01	0.04	-0.90	-1.49	-1.46	-0.13	-0.47	-1.50	0.77	-0.47	-1.50	0.77	-0.47	-1.50	0.77	-0.47	-1.50	0.77	-0.47	-1.50	0.77
Nonmetallic minerals, except fuels	10	0.73	1.13	-0.33	-2.81	-3.28	0.42	-3.55	-4.41	0.75	-3.55	-4.41	0.75	-3.55	-4.41	0.75	-3.55	-4.41	0.75	-3.55	-4.41	0.75
Depository institutions	52	0.32	-0.02	0.46	1.55	0.52	1.05	1.23	0.54	0.59	1.23	0.54	0.59	1.23	0.54	0.59	1.23	0.54	0.59	1.23	0.54	0.59
Manufacturing	12	-0.01	-0.03	0.01	0.69	0.13	0.56	0.70	0.16	0.55	0.70	0.16	0.55	0.70	0.16	0.55	0.70	0.16	0.55	0.70	0.16	0.55
Oil and gas extraction	9	-1.36	-0.73	-0.44	-0.38	-0.48	0.09	0.98	0.24	0.52	0.98	0.24	0.52	0.98	0.24	0.52	0.98	0.24	0.52	0.98	0.24	0.52
Motion Pictures	67	1.68	1.72	0.05	-0.05	-0.59	0.56	-1.73	-2.30	0.51	-1.73	-2.30	0.51	-1.73	-2.30	0.51	-1.73	-2.30	0.51	-1.73	-2.30	0.51
Other transportation equipment	22	2.39	1.97	0.65	3.77	2.29	1.12	1.37	0.31	0.48	1.37	0.31	0.48	1.37	0.31	0.48	1.37	0.31	0.48	1.37	0.31	0.48
Communications	45	-0.73	-0.33	-0.47	3.29	3.27	-0.13	4.02	3.60	0.34	4.02	3.60	0.34	4.02	3.60	0.34	4.02	3.60	0.34	4.02	3.60	0.34
Services Non-Households	61-75	1.16	0.46	0.79	2.48	0.20	1.12	1.32	-0.27	0.33	1.32	-0.27	0.33	1.32	-0.27	0.33	1.32	-0.27	0.33	1.32	-0.27	0.33
Finance and Insurance	51-57	0.75	-0.06	-0.62	-0.31	-0.28	-0.30	-1.06	-0.22	0.32	-1.06	-0.22	0.32	-1.06	-0.22	0.32	-1.06	-0.22	0.32	-1.06	-0.22	0.32
Amusement and recreation services	68	2.06	2.04	0.47	-1.12	-2.05	0.79	-3.18	-4.10	0.32	-3.18	-4.10	0.32	-3.18	-4.10	0.32	-3.18	-4.10	0.32	-3.18	-4.10	0.32
Transportation by Air	42	-4.25	-2.63	-0.43	-2.85	-3.09	-0.17	1.40	-0.46	0.26	1.40	-0.46	0.26	1.40	-0.46	0.26	1.40	-0.46	0.26	1.40	-0.46	0.26

APPENDIX A: DATA SOURCES

Data sources are described in the order they are introduced in the body of the paper.

BLS Quarterly Data

All BLS data in Table 1 were downloaded from the BLS web site and incorporate data revisions through May, 2001. The residual sector is calculated using 1996 weights for the share of manufacturing in the nonfarm nonhousing business economy.

BEA Gross Product Originating, Gross Output, and Intermediate Materials

Gross Product Originating by industry is currently published by the BEA only for 1977-99. Estimates are not published for years prior to 1977, because the methodology previously developed to develop estimates for those years has been discarded and is inconsistent with the data for 1977 to date. In this paper all growth rates are calculated separately for the old and new data, and readers should be cautioned that growth rates for 1948-77 are based on a different methodology than for 1977-99. Also, as pointed out in the text, subsequent revisions have boosted aggregate real GDP growth for the 1948-77 period roughly 0.5 percent per annum above the aggregate real GDP growth rate contained in the pre-1977 data used for the industrial breakdown in Tables 2 and 3. Thus the magnitude of the post-1972 productivity growth slowdown is understated on average across all industries, while the magnitude of the post-1995 revival is overstated by a smaller amount.

All GPO, persons engaged, and hours data for 1948-77 are taken from the *National Income and Product Accounts of the U. S., 1929-82, Statistical Tables*, September 1986, Table 6.2, 6.10B, and 6.11. Hours worked are provided in the NIPA only for one-digit industries and were obtained for two-digit industries by assuming that hours per person engaged across two-digit industries within any one-digit industry were identical.

GPO, Gross Output, Intermediate Materials, and Deflators for 1987-95 are taken from Lum, Moyer, and Yuskavage (2000), and for 1999 from Lum and Moyer (2000). For 1977-87, the data came from the industry download on the BEA website. Persons Engaged and Hours for 1977-99 were obtained from the BEA industry download.

Adjustments for changes in a few industry definitions are from the *Survey of Current Business*, May 1993, p. 53. In particular:

2. "Industrial machinery" was ratio-linked to the earlier definition "Machinery, except electrical," at 1987. Similarly, "Electronic and other electrical equipment" was ratio linked in 1987 to the earlier definition "Electric and electronic equipment."
3. "Depository institutions" was ratio-linked in 1987 to the earlier definition "banking."
4. "Nondepository institutions" was ratio-linked in 1987 to the earlier definition "credit agencies other than banks."
5. "Other services" was ratio-linked in 1987 to the earlier definition "Miscellaneous professional services."

BLS Output by Industry

BLS productivity data were downloaded from the online Data Query. All data are indexes of annual output/hour. Certain industries have not been published since 1997 including: Men and boys suits and coats, Logging, Luggage, Handbags and personal leather goods, Screw machine products, bolts, etc. For these industries, 1997 values have been used instead of 1999 values.

BLS employment weights were used to aggregate from three digit to two digit industries. Further, BEA spending weights were used to weight and aggregate BLS-two digit industries into BEA-equivalent categories (i.e. Transportation or Private Non-Farm).

APPENDIX B: DETAILED CALCULATIONS TO AGGREGATE BLS
INDUSTRY PRODUCTIVITY INTO BEA CATEGORIES

(see next page)

Productivity numbers from BLS: indexed output/hour

Industry	95 Employ Weights		Growth rates		Adj. Growth Rates		Agg. Growth Rates	
	87-95	95-99	87-95	95-99	87-95	95-99	87-95	95-99
Metal mining		51.3						
Copper ores		15.5	1.98	-2.63	0.60	-0.79	2.03	1.76
gold and silver ores		16.0	4.58	8.18	1.43	2.55		
Coal Mining		104.4						
Coal Mining		104.4	5.52	5.32	5.52	5.32	5.52	5.32
Oil and gas extraction		320.1						
Oil and Gas extraction		320.1	1.24	1.81	1.24	1.81	1.24	1.81
Nonmetallic minerals		105.3						
Non-metallic minerals		105.3	0.55	1.10	0.55	1.10	0.55	1.10
N-Dur: Food and Kindred Products		1691.9						
Meat products		472.2	0.66	-0.77	0.18	-0.22	1.11	1.33
Dairy products		147.3	1.90	-0.50	0.17	-0.04		
preserved fruits & veggies		244.7	1.09	2.38	0.16	0.34		
grain mill products		128.2	1.79	3.06	0.14	0.23		
bakery products		211.4	-0.34	2.49	-0.04	0.31		
sugar and confectionery products		100.0	1.00	4.57	0.06	0.27		
fats and oils		31.2	2.31	6.51	0.04	0.12		
beverages		175.3	3.61	-0.21	0.37	-0.02		
misc. food and kindred prod.		181.5	0.36	3.06	0.04	0.33		
N-Dur: Tobacco		42.1						
cigarettes		28.8	4.46	-1.27	3.05	-0.87	3.05	-0.87
N-Dur: Textile mill Products		663.7						
woven fabric mills, cotton		78.7	3.66	0.86	0.43	0.10	2.58	2.44
woven fabric mills, synthetic		70.0	4.67	4.20	0.49	0.44		
narrow fabric mills		23.2	2.16	0.73	0.08	0.03		
knitting mills		194.0	4.05	1.15	1.18	0.34		
textile finishing, except wool		72.4	-3.03	6.30	-0.33	0.69		

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Productivity numbers from BLS: indexed output/hour

Industry	95 Employ	Weights	Growth rates		Adj. Growth Rates		Agg. Growth Rates	
			87-95	95-99	87-95	95-99	87-95	95-99
carpets and rugs	63.3	9.5	-0.54	0.52	-0.05	0.05		
yarn and thread mills	94.1	14.2	3.97	5.25	0.56	0.74		
misc. textile goods	52.3	7.9	2.66	0.66	0.21	0.05		
N-Dur: Apparel and textile products	935.8						2.27	7.09
men and boys suits and coats*	36.4	3.9	-0.97	6.65	-0.04	0.26		
men and boys furnishings	251.6	26.9	2.63	10.39	0.71	2.79		
women and misses outerwear	278.8	29.8	3.80	6.32	1.13	1.88		
womens and childrens undergarments	47.9	5.1	5.98	14.92	0.31	0.76		
hats caps and millinery	63.3	6.8	-2.13	6.36	-0.14	0.43		
misc apparel and accessories	36.0	3.8	1.94	-2.47	0.07	-0.10		
misc. fab. textile products	221.8	23.7	0.99	4.43	0.23	1.05		
Dur: Lumber and wood products	769.2						-0.04	0.66
logging*	82.5	10.7	-1.89	-4.48	-0.20	-0.48		
sawmills and planing mills	186.6	24.3	1.21	3.23	0.29	0.78		
millwork, plywood, and structural members	279.7	36.4	-0.95	-0.55	-0.34	-0.20		
wood containers	51.2	6.7	0.74	-0.26	0.05	-0.02		
wood buildings and mobile homes	81.4	10.6	-0.38	-0.05	-0.04	-0.01		
misc. wood products	87.8	11.4	1.79	5.06	0.20	0.58		
Dur: Furniture and fixtures	509.7						1.78	3.15
household furniture	280.5	55.0	1.95	2.40	1.07	1.32		
office furniture	63.0	12.4	0.14	2.06	0.02	0.26		
public building and related furniture	42.5	8.3	6.87	4.91	0.57	0.41		
partitions and fixtures	86.1	16.9	0.15	5.68	0.03	0.96		
misc. furniture and fixtures	37.7	7.4	1.19	2.73	0.09	0.20		
N-dur: paper and allied products	692.8						1.48	1.83

Productivity numbers from BLS: indexed output/hour

Industry	95 Employ	Weights	Growth rates		Adj. Growth Rates		Agg. Growth Rates	
			87-95	95-99	87-95	95-99	87-95	95-99
pulp mills	12.6	1.8	3.46	-10.00	0.06	-0.18		
paper mills	164.0	23.7	2.13	0.85	0.50	0.20		
paperboard mills	50.9	7.3	2.23	2.30	0.16	0.17		
paperboard containers and boxes	220.0	31.8	0.62	1.92	0.20	0.61		
misc. converted paper products	245.3	35.4	1.56	2.91	0.55	1.03		
N-dur: Printing and publishing	1545.9							
newspapers	447.3	28.9	-2.95	2.21	-0.85	0.64	-0.69	2.54
periodicals	131.1	8.5	-1.63	6.77	-0.14	0.57		
books	123.7	8.0	0.20	0.92	0.02	0.07		
misc. publishing	84.7	5.5	-0.67	7.57	-0.04	0.41		
commercial printing	562.7	36.4	0.87	1.80	0.32	0.65		
manifold business forms	45.2	2.9	-3.28	-1.10	-0.10	-0.03		
greeting cards	27.1	1.8	-0.97	2.91	-0.02	0.05		
blankbooks and bookbinding	69.4	4.5	1.04	3.15	0.05	0.14		
printing trade service	54.7	3.5	1.93	0.80	0.07	0.03		
N-dur: Chemicals and allied products	1038.1							
industrial inorganic chem.	119.9	11.5	1.11	11.15	0.13	1.29	1.40	2.36
plastics materials and synthetics	158.4	15.3	3.12	3.18	0.48	0.49		
drugs	259.8	25.0	1.04	-0.91	0.26	-0.23		
soaps, cleaners, and toilet goods	153.2	14.8	2.13	-0.38	0.31	-0.06		
paints and allied products	55.3	5.3	2.07	1.56	0.11	0.08		
industrial organic chem.	145.9	14.1	-0.18	3.03	-0.02	0.43		
agriculture chem.	53.1	5.1	1.02	-0.37	0.05	-0.02		
misc. chem. Products	92.6	8.9	0.94	4.31	0.08	0.38		
N-dur: Petroleum and coal products	145.2							
petroleum refining	104.5	72.0	3.50	6.19	2.52	4.46	2.60	4.73

Productivity numbers from BLS: indexed output/hour

Industry	95 Employ Weights	Growth rates		Adj. Growth Rates		Agg. Growth Rates	
		87-95	95-99	87-95	95-99	87-95	95-99
asphalt paving and roofing materials	26.7	18.4	1.33	0.99	0.24	0.18	
misc. petroleum and coal products	14.0	9.6	-1.68	0.93	-0.16	0.09	
N-dur: Rubber and misc. plastic products	979.9						2.32 3.59
tires and innertubes	80.2	8.2	3.38	2.61	0.28	0.21	
hose, belting, gaskets, and packing	68.1	6.9	0.56	2.15	0.04	0.15	
fabricated rubber products	112.0	11.4	2.43	3.69	0.28	0.42	
Misc. plastic products	711.2	72.6	2.38	3.86	1.73	2.80	
Leather and leather products	105.6						0.57 4.20
footwear, except rubber	52.2	49.4	1.97	2.92	0.98	1.44	
Luggage*	10.7	10.1	-1.25	13.01	-0.13	1.32	
Handbags and personal leather goods*	11.8	11.2	-2.51	12.86	-0.28	1.44	
Dur: Stone, clay, and glass products	539.6						0.94 3.10
flat glass	15.5	2.9	-0.05	6.21	0.00	0.18	
glass and glassware, pressed or blown	73.8	13.7	1.82	5.40	0.25	0.74	
products of purchased glass	62.0	11.5	0.74	5.84	0.09	0.67	
cement, hydraulic	17.6	3.3	2.72	2.90	0.09	0.09	
structural clay products	34.2	6.3	1.48	2.41	0.09	0.15	
pottery and related products	41.5	7.7	1.11	2.50	0.09	0.19	
concrete, gypsum and plaster products	204.5	37.9	0.55	2.26	0.21	0.86	
misc. non-metallic mineral products	77.0	14.3	0.94	1.53	0.13	0.22	
Dur: Primary metal industries	712.0						2.44 2.61
blast furnace and basic steel products	241.6	33.9	4.44	1.08	1.51	0.37	
iron and steel foundries	131.1	18.4	1.49	2.83	0.28	0.52	
Primary non-ferrous metals	40.0	5.6	1.88	3.04	0.11	0.17	
nonferrous rolling and drawing	167.6	23.5	-0.10	5.32	-0.02	1.25	

Productivity numbers from BLS: indexed output/hour

Industry	95 Employ		Weights		Growth rates		Adj. Growth Rates		Agg. Growth Rates	
	87-95	95-99	87-95	95-99	87-95	95-99	87-95	95-99	87-95	95-99
nonferrous foundries	87.1	12.2			2.05	2.62	0.25	0.32		
misc. primary metal products	44.6	6.3			5.25	-0.30	0.33	-0.02		
		100.0							2.03	0.71
Dur: Fabricated metal industries	1437.0									
metal cans and shipping containers	40.1	2.8			4.58	2.65	0.13	0.07		
cutlery, handtools, and hardware	127.7	8.9			1.34	2.68	0.12	0.24		
plumbing and heating, except electrical	57.2	4.0			1.10	3.76	0.04	0.15		
fabricated structural metal products	427.8	29.8			0.70	1.58	0.21	0.47		
Screw machine products, bolts, etc.*	100.0	7.0			1.16	8.77	0.08	0.61		
metal forgings and stampings	251.7	17.5			1.11	4.39	0.19	0.77		
metal services, n.e.c.	129.3	9.0			3.06	0.04	0.28	0.00		
ordnance and accessories, n.e.c.	50.7	3.5			-1.65	1.28	-0.06	0.05		
misc. fabricated metal products	252.0	17.5			5.92	-9.39	1.04	-1.65		
		100.0							5.37	6.83
Dur: machinery (except electrical)	2067.1									
engines and turbines	88.3	4.3			2.56	5.22	0.11	0.22		
farm and garden mach.	101.2	4.9			3.72	-1.77	0.18	-0.09		
construction and related mach.	223.5	10.8			2.50	2.91	0.27	0.32		
metalworking mach	340.4	16.5			1.73	1.83	0.28	0.30		
special industry mach	172.3	8.3			3.50	1.29	0.29	0.11		
general industrial mach.	252.1	12.2			1.08	0.54	0.13	0.07		
computer and office equip.	352.2	17.0			19.33	34.15	3.29	5.82		
refrigeration and service mach.	201.2	9.7			1.49	2.23	0.15	0.22		
industrial mach. N.e.c.	335.9	16.2			4.10	-0.82	0.67	-0.13		
		100.0							8.59	12.85
Dur: Electrical equipment	1625.0									
electrical dist. Equip.	83.0	5.1			4.47	0.62	0.23	0.03		
electrical industrial apparatus	157.5	9.7			5.13	1.93	0.50	0.19		
household appliances	121.4	7.5			3.02	4.14	0.23	0.31		

Productivity numbers from BLS: indexed output/hour

Industry	95 Employ	Weights	Growth rates		Adj. Growth Rates		Agg. Growth Rates	
			87-95	95-99	87-95	95-99	87-95	95-99
electric lighting and wiring equip.	178.8	11.0	1.60	3.81	0.18	0.42		
communications equip	264.9	16.3	6.70	16.23	1.09	2.65		
electronic components and accessories	580.8	35.7	17.38	24.51	6.21	8.76		
misc. electrical equip. and supplies	154.6	9.5	1.65	5.24	0.16	0.50		
Dur: Motor vehicles and equipment	970.9							
motor vehicles and equip	970.9	100.0	0.81	6.16	0.81	6.16	0.81	6.16
Dur: Other transportation equip.	819.3							
aircraft and parts	450.5	55.0	0.95	6.44	0.52	3.54		
ship and boat building and repairing	159.6	19.5	-0.25	3.47	-0.05	0.68		
railroad equip	37.6	4.6	5.07	7.82	0.23	0.36		
motorcycles, bicycles, and parts	73.4	9.0	2.31	0.23	0.21	0.02		
guided missiles, space vehicles, and parts	98.2	12.0	2.39	6.68	0.29	0.80		
Dur: Instruments and related products	843.4							
search and navigation equip	160.7	19.1	5.03	-1.69	0.96	-0.32	4.27	2.27
measuring and controlling devices	288.3	34.2	4.76	1.09	1.63	0.37		
medical instruments and supplies	264.3	31.3	3.42	4.94	1.07	1.55		
ophthalmic goods	37.0	4.4	6.43	7.92	0.28	0.35		
photo equip and supplies	85.1	10.1	3.23	3.20	0.33	0.32		
Dur: Misc. manufacturing industries	389.7							
jewelry, silverware, and plated ware	50.3	12.9	0.02	7.25	0.00	0.94	1.40	1.85
musical instruments	14.3	3.7	-1.76	-0.14	-0.06	-0.01		
toys and sporting goods	117.6	30.2	1.59	2.19	0.48	0.66		
pens, pencils, office supplies	31.3	8.0	3.77	-1.12	0.30	-0.09		
costume jewelry and notions	25.9	6.6	4.53	1.11	0.30	0.07		
misc. manufactures	150.4	38.6	0.97	0.71	0.38	0.27		
		100.0						

Productivity numbers from BLS: indexed output/hour

Industry	95 Employ Weights		Growth rates		Adj. Growth Rates		Agg. Growth Rates	
	1995	1999	87-95	95-99	87-95	95-99	87-95	95-99
Transportation	3904.0							
Railroad Transportation	205.0	5.3	5.57	3.86	0.29	0.20	1.11	0.46
Trucking, except local	878.0	22.5	2.83	1.21	0.64	0.27	0.29	0.20
Air Transportation	682.0	17.5	1.03	-0.07	0.18	-0.01	0.64	0.27
	45.2				0.18	-0.01	0.18	-0.01
Com: Telephone and telegraph	899.7							
telephone communications	899.7	100.0	4.91	6.11	4.91	6.11	4.91	6.11
Com: Radio and TV	391.2							
radio and TV broadcasting	235.7	60.3	1.15	-1.85	0.69	-1.11	-0.02	-1.73
cable and other pay TV services	155.5	39.7	-1.78	-1.55	-0.71	-0.61		
	100.0							
Retail	21187.0							
lumber and other building materials dealers	512.6	2.4	2.03	4.77	0.05	0.12	0.97	3.12
paint, glass, and wallpaper stores	66.1	0.3	3.78	4.69	0.01	0.01		
hardware stores	162.7	0.8	1.02	7.98	0.01	0.06		
retail nurseries, lawn and garden supply store	90.6	0.4	1.98	6.37	0.01	0.03		
department stores	2345.6	11.1	1.29	7.11	0.14	0.79		
variety stores	137.7	0.6	8.86	11.31	0.06	0.07		
misc. general merchandise store	197.2	0.9	6.18	4.37	0.06	0.04		
food stores	3366.0	15.9	-1.14	0.97	-0.18	0.15		
new and use car dealers	996.0	4.7	0.86	1.10	0.04	0.05		
auto and home supply stores	368.9	1.7	0.69	2.32	0.01	0.04		
gasoline service stations	648.9	3.1	2.92	2.68	0.09	0.08		
apparel and accessory stores	1125.4	5.3	3.18	6.60	0.17	0.35		
furniture, home furnishings, and equip stores	945.5	4.5	4.47	8.10	0.20	0.36		
eating and drinking places	7354.2	34.7	0.11	0.83	0.04	0.29		
drug and propriety stores	604.5	2.9	0.83	4.85	0.02	0.14		
liquor stores	110.4	0.5	0.45	2.50	0.00	0.01		
used merchandise stores	99.5	0.5	1.99	10.97	0.01	0.05		

Productivity numbers from BLS: indexed output/hour

Industry	95 Employment Weights		Growth rates		Adj. Growth Rates		Agg. Growth Rates	
	87-95	95-99	87-95	95-99	87-95	95-99	87-95	95-99
misc. shopping goods stores	938.9	4.4	2.05	5.23	0.09	0.23		
nonstore retailers	328.4	1.6	4.74	10.48	0.07	0.16		
fuel dealers	100.0	0.5	1.66	0.20	0.01	0.00		
retail stores, n.e.c	476.7	2.2	2.91	6.09	0.07	0.14		
Depository institutions	2025.1							
commercial banks	1465.5	72.4	2.93	1.68	2.12	1.22	2.12	1.22
Hotels and lodgings	1668.1							
hotels, motels	1615.2	96.8	1.20	0.76	1.16	0.74	1.16	0.74
Personal Services	1162.9							
laundry, cleaning and garment services	431.6	37.1	0.67	3.59	0.25	1.33	0.85	2.46
photo studios, portrait	73.9	6.4	3.21	-5.18	0.20	-0.33		
beauty shops	391.2	33.6	0.43	2.26	0.14	0.76		
barber shops	173.8	14.9	1.70	4.65	0.25	0.69		
funeral services and crematories	92.4	7.9	-0.04	0.00	0.00	0.00		
Auto repair	1020.1	100.0						
automotive repair shops	567.0	55.6	2.23	1.64	1.24	0.91	1.24	0.91
Motion Pictures	487.6							
motion picture theaters	118.7	24.3	0.17	2.15	0.04	0.52	0.04	0.52

All data is from the BLS website- historical output/hour data, 1987 forward.
 *- this data obtained from Labor Statistics- 1999