An Integrated BEA/BLS Production Account:

A First Step and Theoretical Considerations

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I. Introduction

The purpose of this paper is to take the first step toward shedding light on similarities and differences between BEA and BLS production data. To do so, we use a production account framework to reveal the relationship between GDP and the major sector estimates. We then analyze output measures available from BEA and BLS to provide an explanation of the sources of differences among these measures.

The paper begins by examining the theoretical foundation for a production account that can be used to analyze productivity. It goes on to present such a production account at the major sector level, detailing the relationship between GDP and the major sector estimates to help clarify how the BEA and BLS data relate to each other. The System of National Accounts (1993) (SNA) includes a production account, but the account is not one that can be used to construct multifactor productivity (MFP) measures, notably because of the absence of a capital services measure.[1] A production account suitable for productivity analysis has been constructed by Jorgenson, Gollop and Fraumeni (1987) (JGF). This paper represents the first step towards the construction of such a production account consistent with various data produced by BEA and BLS.

The paper then begins the task of trying to explain differences between BEA and BLS data by looking at output measures. This is the most challenging task undertaken.

[1] Hulten (1994).

The analysis does not fully reconcile differences which arise from source data, concept, and methodology, but it is an initial step towards explaining these differences. Finally, possible future efforts to harmonize and integrate BEA and BLS production data and to improve the accuracy of these accounts are described.

II. A General Formulation of Production Accounts

Production accounts that are suitable for studies of economic growth, productivity, and structural change match outputs with the inputs used to produce them, typically both at the aggregate and industry levels and frequently for large sector subaggregates. These accounts must consist of both nominal and real accounts. Aggregation over the cells of the real account is performed using index number formulas with weights from the nominal account. The general formulation, which is presented in matrix form, is an elaboration and refinement of the type of production account proposed by JGF (1987). It is general enough to examine issues related to the scope of the accounts, such as which inputs and outputs to exclude in moving from the aggregate level to a large sector subaggregate. None of the production accounts which underlie the BLS productivity measures use this general formulation because the large database needed to implement it is unavailable and constructing that database would require many assumptions and additional resources. Accordingly, the following discussion indicates where current practice significantly departs from the general formulation.

II.a The Nominal Production Account

II.a.1 Valuing Intermediate Input: Flows of Commodities between Industries

Assume that there are m "commodities" made in an economy or a large sector of an economy. Each "commodity" represents some category of goods or service which is

sold for some value. In this model, the categories would ideally be "fine enough" that each represents a homogenous commodity. Of course, due to data limitations, real-world accounts must settle for "as fine as possible". Suppose further that there are n industries and that each industry uses labor, capital and purchased commodities (both domestically and foreign produced) to create one or more commodities of its own. Each establishment is assumed to be classified to an industry by its "primary" product---the commodity accounting for the largest share of its sales. Other commodities produced by establishments in an industry are considered "secondary" products. Let:

$VM_{i,j}$ = the value of the ith commodity made by the jth industry, and

$VU_{i,k}$ = the value of the ith domestically produced commodity used by the kth industry.

In the context of the total economy, the matrix, VU, is the core of an input-output "use" table. Each row describes the disposition of a commodity type, while each column describes commodities used by an industry. The matrix, VM, corresponds to a complete "make" table. In the U.S., benchmark "make and use" tables are created once every five years by the BEA, when data from the economic censuses are collected. In these years, fairly extensive data are collected on the values of commodities by type that are made and used by each establishment, particularly in manufacturing. These tables, supplemented with other data, are used by BEA to benchmark GDP and other important series.

In this general formulation, a key matrix of the nominal production account, which is similar to the "use" table, but has a separate row for each commodity produced by each given industry, is:

$VN_{i,j,k}$ = value of the ith type of commodity made by the jth industry and used by the kth industry.

VN is depicted in Figure 1. A row is reserved for each i,j combination that is nonzero at any point in time. In the example shown the first industry (j=1) produces two commodities: commodity 1 (i=1) and 2 (i=2), and the second industry (j=2) produces three commodities: commodity 2 (i=2), 4 (i=4), and 5 (i=5). VN records the values of the commodities used by each industry by both the industry source and by the type of commodity. VN resembles a "use" table, but contains the additional information on secondary products needed to rearrange the rows and to group inputs by producing industry instead of by commodity.[2] While doing that, VN also represents all of the information on the commodity mix of inputs obtained from each industry, which ideally would be available for creating the real production account in order to define deflation of industry inputs in terms of commodity price indexes.[3]

Like the use table, the new table, VN, excludes capital goods, produced in one industry and sold to a second industry, as inputs to the second. As in national accounting, production accounts treat capital goods as final outputs of the economy that enter the "capital stock" and provide input "services" in subsequent periods.

VN is a matrix which allows the accounting structure to be readily adapted to construction of different aggregate sectors, such as the "total economy" or the "private business" sector (Section II.c). VN is a matrix of intrasectoral transactions, that is, it includes only transactions in intermediate inputs that are traded among industries in the sector being analyzed. For example, purchases from businesses by governments or

[2] Currently the type of data needed to track commodities in this kind of detail is not available. However, BEA has developed alternative tables showing commodities used by each industry, on the one hand, and the industry origins of commodities on the other. The assumptions involved in moving secondary products to get from one type of table to the other are explored by Guo, Lawson and Planting (2002).

[3] The detailed information to measure each cell of VN is not available, but existing BEA and BLS real industry output measures make assumptions that effectively estimate this information. For example, the single price index available for a commodity group is applied to all commodities of that type, regardless of industry source.

nonprofit institutions, which are intrasectoral transactions for the total economy, would move outside of VN when private business is analyzed.

II.a.2 Value of sector output and costs of factor input

Assume that each commodity made is sold either to another industry within the sector for use as an intermediate input or is sold outside of the sector, including to industries and sectors outside the sector and to final uses such as personal consumption or investment. As with a "use" table, we can append a column, VS, just to the right of VN (see Figure 2), indicating the value of outputs that are sold outside of the sector being analyzed:

$VS_{i,j}$ = value of sales outside the sector of the ith commodity made in the jth industry. In addition, "sectoral output" will be defined as the total output sold outside of the sector being analyzed[4], and defined as: $VS_T = \Sigma_{i=1}^{m} \Sigma_{j=1}^{n} VS_{i,j}$, where m is the number of commodities and n is the number of industries. (VS_T is not depicted in Figure 2, but would be the sum of all cells of $VS_{i,j}$.) The sum of $VN_{i,j,k}$ and $VS_{i,j}$ is depicted in Figure 2 as a vector of length ixj totaling the value of each commodity type made by each industry:

$$\Sigma_{k=1}^{n} VN_{i,j,k} + VS_{i,j} = VM_{i,j} .$$

This matrix, $VM_{i,j}$, corresponds to the total industry output column of a typical make table, with more detail added as there is a separate entry for how much of each commodity is made in each industry.

[4] Section IV of this paper will present industry "gross output" $VY^{G}_{i,j}$ and "sectoral output" $VY^{S}_{i,j}$ measures. BEA and BLS refer to output as gross output and sectoral output respectively to distinguish these constructs from value added, a convention adopted in this paper. Gross output includes intrasectoral sales; sectoral output excludes intrasectoral sales

This matrix is appended to the far right of Figure 2. Next, the total value of industry output, VY_j, for each industry, j, is the total value of all of the commodities it makes:

$$VY_j = \Sigma_{i=1}^{m} VM_{i,j} = \Sigma_{i=1}^{m} (\Sigma_{k=1}^{n} VN_{i,j,k} + VS_{i,j}).$$

Note that VY is grouped by making industry, j, not by using industry, k. The vector, VY, is too small to be appended as a column. However, it does have the right dimension to be appended as a row. It is placed at the far bottom, below VN, where its usefulness will become apparent shortly.

In Figure 2 rows are appended immediately below the intrasectoral transactions table, VN, indicating costs of primary factors used by industry, k:[5]

CL_k = labor costs of the kth industry

CK_k = capital costs of the kth industry.

Capital costs, CK, are the implicit costs of using the capital stock in the current period, and not the costs for purchasing capital goods, that is, they are not investments. Capital stock itself is not represented in this matrix model. Industries add to the capital stock (investments, a part of final uses) and derive services from the existing capital stock Investment as a delivery to outside of the sector is part of VS and capital input rentals are treated as coming from outside of the sector.[6]

[5] In Table 1 below these are called labor compensation and costs of capital services, respectively.

[6] A firm usually owns its own capital, in which case capital services are treated as flowing in from outside the sector (from the capital stock) similar to labor services. For cases where a firm in one industry leases an asset to another firm with an operating lease, capital services are treated as an input (CK) to the leasing industry and then are recorded in VN or VS as a flow of intermediate services from the leasing industry to the using industry. BEA classifies an asset as being in the possession of the lessee (user) for capital leases and in the possession of the lessor for operating leases.

Next we define the total cost of all inputs, TCI_k, to include the intrasectoral purchases of materials and services and also the expenses for the "primary" factors of capital and labor,

$$TCI_k = \Sigma_{i=1}^{m} \Sigma_{j=1}^{n} VN_{i,j,k} + CL_k + CK_k .$$

Then TCI is appended to VN as a row, just below CL and CK, but just above the final row, VY (see Figure 2). Factor costs include some indirect business taxes assigned to a specific factor cost, such as business property taxes and business motor vehicle licenses. Total costs, TC_k, is defined to include any other indirect business taxes less subsidies, SUB_k, less subsidies that are not assigned to any specific factor of production, $OIBT_k$, i.e.:

$$TC_k=TCI_k+ -(SUB_k-OIBT_k).$$

A fundamental of cost accounting is that profits are the difference between revenues and costs. Similarly, national accounts fully account for revenues in terms of costs and profits. The nominal production account will adopt this treatment, imposing an identity between the value of each industry k's output, VY_k, and total costs, TC_k. In practice, the assumption is imposed either by identifying capital costs with "residual property income":

$$CK_k = VY_k - CL_k - \Sigma_{i=1}^{m} \Sigma_{j=1}^{n} VN_{i,j,k} - OIBT_k + SUB_k,$$

or by measuring the value of output in terms of total factor outlays and indirect taxes:

$$VY_k = CK_k + CL_k + \Sigma_{i=1}^{m} \Sigma_{j=1}^{n} VN_{i,j,k} + OIBT_k - SUB_k.$$

The residual property income method is used by national accountants for industries that sell products in markets, allowing VY to be measured in terms of revenues. This method was introduced into productivity work by Jorgenson and Griliches (1967) (JG), who identified this residual measure of capital costs with the

implicit rents of capital. In long run competitive equilibrium, firms presumably earn a fair return to investments. Under these conditions, profits can be regarded as part of the cost of capital, along with interest, depreciation and taxes.

Output is valued in terms of factor costs by national accountants for industries and sectors, such as governments and nonprofit institutions, which do not sell in markets. This requires an explicit estimate of capital costs. The accounting procedures prescribed in the 1993 System of National Accounts (SNA93) for government "product" reflect only labor costs, omitting capital costs. The U.S. BEA and others in the international community have recently included estimates of capital consumption (depreciation), along with labor costs, in government product estimates. The JG (1967) article showed that the rental cost for capital will include both depreciation and returns to the initial investment. While we cannot directly measure returns to government capital, government investments do compete for funds with private investments. Moulton (2003) has suggested the further step of including some empirical estimate of real returns to government capital in government product.

II.a.3 Imports in the Nominal Production Account

Each row of an input-output "use" table records the disposition of a given type of commodity. In addition to the intermediate transactions table, VU, there are appended columns indicating specific "final uses." Among the final use columns, one column, VF_i, records imports of each type of commodity, with negative entries. With this negative import entry, total commodity output, the sum across a row, is equal to domestic output and the sum of all final uses is equal to GDP. The single-column treatment of imports does not distinguish how much of the imports went to intermediate uses and how much

went to final uses. It is unnecessary to distinguish this when computing GDP because GDP is a measure of domestic product and excludes all intermediates inputs.

In a production account used for productivity measurement it is desirable to match outputs with all inputs, regardless of their source, at each level of aggregation. An architecture that is ideal for productivity measurement would keep inputs and outputs separate, and would not adopt the treatment of imported intermediates as an offset to output, even though this simplification is suitable for measuring product. Imported final commodities should be excluded from sector output, since they are not made inside the sector, but ideally imported intermediate inputs would be included in sector output.

The production account specifications being developed here follow the treatment of imported intermediates proposed by Gollop (1981). First, the intermediate transactions matrix, VN, which includes only transactions that are internal to the sector, includes only intermediate inputs obtained from domestic sources. The nominal production account treats the value of imported intermediate inputs as input costs (CF) rather than as offsets to the value of output (VF). In the production account, each type of imported commodity has its own row, indicating the disposition of the imported portion of that commodity:

$CF_{i,k}$ = cost of imported commodities of the ith type used by the kth industry.

These rows are not a part of VN, but are appended below VN in Figure 2, similar to the rows for labor costs (CL) and capital costs (CK), which are also inputs purchased from outside the sector. The block of commodity rows for imports, CF, is very similar to the blocks of commodity rows for each industry inside the sector, which describe the uses of each type of commodity coming from a given industry source.[7] Imported final products

[7] It should be noted that the data currently being collected are insufficient to estimate these new rows.

are, of course, excluded from VS. In Figure 2 a small "import" box, VFF_i, is appended that records deliveries of final imported products of type, i, to domestic final consumption. The entries of VFF would be positive, but would be omitted in the calculation of sector output by adding up VS. For an economy open to trade, sector output includes exports and excludes imported final products. GDP excludes intermediate inputs whether the economy is open or closed, so $GDP = VS_T - \Sigma_{i=1}^{m}\Sigma_{k=1}^{n} CF_{i,k}$.[8] Industry gross output however, includes imported intermediate inputs.

Finally, to inject this treatment into the full model, the formula equating the value of industry output with the cost of factor outlays, presented earlier, needs to be modified to reflect the cost of imported intermediate inputs:

$TCI_k = \Sigma_{i=1}^{m}\Sigma_{j=1}^{n} VN_{i,j.k} + CF_k + CL_k + CK_k$, in order to preserve the identity, $TC_k = VY_k$.

II.b The Real Production Account

II.b.1 Real Industry Outputs and Inputs and their Prices

In this section, vectors and arrays of growth rate functions are described which parallel the elements of the nominal production account. Each element of the account ($VN_{i,j,k}$, $VS_{i,j}$, CL_k, CF_k, and CK_k) is considered to be a function of time rather than an observation for a single period. These functions would be continuous and differentiable in the context of a continuous model, while, for application to discrete data, these are time series. Bold italics are used to refer to the growth rate of a variable, e.g. $\boldsymbol{Z} = dlnz/dt = (dz/dt)/z$ in continuous time, while, for example with a discrete Tornqvist index

[8] The BLS business, nonfarm business, private business and private nonfarm business output measures are net of all intermediates including imported intermediates, so, strictly speaking, they are product measures. Gullickson and Harper (1999) pointed out the difference between the BLS multifactor productivity measures, and measures based on the sector output concept, as are specified in Section II.b, would be tiny. If imported intermediates were included in outputs, they would also need to be included in inputs. They would enter output and input with the same weight, and would approximately offset each other.

formulation, ***Z*** would refer to $\ln(Z_t)-\ln(Z_{t-1})$. Next for any element Z, it is assumed that either the value of Z, VZ, or the cost of Z, CZ is equal to the product of a real quantity (Z without prefix) and a price (PZ). VZ or CZ = Z * PZ. In growth rates, the decomposition is: ***VZ*** = ***Z*** + ***PZ*** or ***CZ*** = ***Z*** + ***PZ.***

Price and quantity are defined in line with normal conventions in national accounting and productivity measurement. Time series information on value or cost usually are available for some level of cell detail. Typically we have price indexes for commodities and quantity information for hours worked and capital stock[9]. Prices and quantities may both exist for some cells, but in order to ensure the value-price-quantity relationship price or quantity must be chosen, and the other (price or quantity) is then implicity determined to ensure that price times quantity equals value. This can also be thought of in terms of growth rates. Define:

$\boldsymbol{PN}_{i,j,k}$ = the growth rate of the price of the ith commodity made in industry j and used by the kth industry,
$\boldsymbol{PS}_{i,j}$ = the growth rate of price for sales of the ith commodity sold outside the sector,
$\boldsymbol{QL}_k$ = the growth rate of labor hours in the kth industry,
$\boldsymbol{PF}_{i,k}$ = the growth rate of the price for the ith imported commodity paid by the kth industry, and
$\boldsymbol{QK}_k$ = the growth rate of the stock of capital inputs to the kth industry.

The growth rate of the other component is determined by either "deflating" the value with the commodity price or by determining the unit cost of the input, i.e.:

$\boldsymbol{N}_{i,j,k} = \boldsymbol{VN}_{i,j,k} - \boldsymbol{PN}_{i,j,k}$ (intermediate outputs/inputs),
$\boldsymbol{S}_{i,j} = \boldsymbol{VS}_{i,j} - \boldsymbol{PS}_{i,j}$ (industry outputs of the commodity delivered outside the sector),
$\boldsymbol{PL}_k = \boldsymbol{CL}_k - \boldsymbol{L}_k$ (average compensation per hour),

[9] We will just note that, in the productivity work of Jorgenson, Gollop and Fraumeni (1987) and of BLS (2002), labor and capital inputs, for each industry, are constructed from detailed "types", such as workers with different amounts of education and stocks of high tech assets, other equipment, and buildings. Prices and quantities are estimated for each component and then superlative aggregation procedures are used. This is entirely symmetric with the approach that will be spelled out shortly (in Section II.b.2) for aggregating heterogeneous intermediate inputs and heterogeneous outputs.

$\boldsymbol{F}_{i,k} = \boldsymbol{CF}_{i,k} - \boldsymbol{PF}_{i.k}$ (imported intermediate input), and
$\boldsymbol{PK}_k = \boldsymbol{CK}_k - \boldsymbol{K}_k$ (capital rental price).

II.b.2 Industry Accounting: Aggregation of Real Inputs and Real Outputs, and MFP

The solution to the standard economic index number problem is to use values to add up heterogeneous quantities, such as apples and oranges. Having estimated the values and the quantity and price trends for numerous detailed cells representing heterogeneous outputs and inputs, it is now easy to spell out the various real aggregations needed to complete the real production account.

The growth rate of total input, I_k, for industry k, is derived using weights from column k of the nominal production account together with corresponding quantity growth rate functions:

$$\boldsymbol{I}_k = (CL_k/TCI_k)\,\boldsymbol{L}_k \dot{+} \Sigma_{i=1}^{m}\,(CF_{i,k}/TCI_k)\,\boldsymbol{F}_{i,k} + (CK_k/TCI_k)\,\boldsymbol{K}_k \dot{+} \Sigma_{i=1}^{m}\Sigma_{j=1}^{n}\,(VN_{i,j,k}/TCI_k)\,\boldsymbol{N}_{i,j,k}\,.$$

This formula defines the growth rate of the input function at a specific point in time.[10] Similarly, the industry's real output is aggregated in conformity with a model of joint production. Aggregation is in growth rate form in terms of the commodities the industry makes, aggregated using revenue share weights :

$$\boldsymbol{Y}_j = \Sigma_{i=1}^{m}\,\{\,[\Sigma_{k=1}^{n}\,(VN_{i,j,k}\,/VY_j\,)\,\boldsymbol{N}_{i,j,k}\,] + (VS_{i,j}/VY_j)\,\boldsymbol{S}_{i,j}\,\}.$$

It is worth underscoring that, for implementation with discrete data, it is very important to have consistent categories of industries at successive observations. The growth rate of multifactor productivity in industry k (MFP_k) is defined in terms of its inputs and its output (matched with itself, industry k, not industry j):

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[10] The line integral of this function over time is a Divisia index. A discrete Tornqvist index can be formulated using weights that are arithmetic averages of shares in the two periods being compared. While the formula is a bit harder to describe, it is easy to compute a Fisher Ideal index from the same information.

$\boldsymbol{MFP}_k = \boldsymbol{Y}_k - \boldsymbol{I}_k$.

II.b.3 Sectoral Accounting: Aggregation Across Industries

The macroeconomics literature of the 1950s and 1960s emphasized aggregate production models that described the generation of GDP from a few aggregate factors of production. Such a model can provide a formal framework[11] within which we can consider how best to define inputs and outputs to measure a sector's productivity. Real sectoral output for an economy or sector is the total of outputs, delivered by each industry, that are sold outside of the economy or sector. When the joint production model is applied to the sector, the sector is viewed as if it were a firm choosing an output mix, and then it can be shown that aggregation should be done using revenue share weights:

$$\boldsymbol{S}_T = \Sigma_{k=1}^{m} (VS_k/VS_T)\, \boldsymbol{S}_k \ .$$

An aggregate production model can also be used to rationalize aggregation of each type of input across industries, again using industry shares in total cost:

$\boldsymbol{L}_T = \Sigma_{k=1}^{n} (CL_k/CL_T)\, \boldsymbol{L}_k$ where $CL_T = \Sigma_{k=1}^{n} CL_k$,
$\boldsymbol{F}_T = \Sigma_{i=1}^{m}\Sigma_{k=1}^{n} (CF_{i.k}/CF_T)\, \boldsymbol{F}_j$ where $CF_T = \Sigma_{i=1}^{m}\Sigma_{k=1}^{n} CF_{i.k}$, and
$\boldsymbol{K}_T = \Sigma_{k=1}^{n} (CK_k/CK_T)\, \boldsymbol{K}_k$ where $CK_T = \Sigma_{k=1}^{n} CK_k$.

We then aggregate these inputs across types of input to get a measure of the "sectoral input", that is the input to the economy or sector from outside sources:

$\boldsymbol{I}_T = (CL_T/TCI_T)\, \boldsymbol{L}_T + (CF_T/TCI_T)\, \boldsymbol{F}_T + (CK_T/TCI_T)\, \boldsymbol{K}_T$, where $TCI_T = CL_T + CF_T + CK_T$.

Based on these we obtain a measure of aggregate MFP:

$\boldsymbol{MFP}_T = \boldsymbol{S}_T - \boldsymbol{I}_T$.

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[11] A central element of these models is an aggregate production function. This function describes the production of the economy as if it were operated as a single giant firm. To measure productivity in this tradition, one applies the joint production model to the final outputs and primary inputs of the economy while assuming their prices are exogenously determined. The optimum flows of intermediates are not explicitly modeled, but rather presumed to be efficiently determined inside the economy. (Gullickson and Harper (1999) described this as treating the intermediates as if they were inside the firm's "black box".)

Note that GDP differs from sectoral output in that it excludes imported intermediate inputs. $\boldsymbol{MFP}_T$ treats imported intermediate inputs as an additional input rather than an exclusion from output.[12]

II.b.4 The Relationship of Industry and Aggregate Productivity Measures

Evsey Domar's (1961) key result was to show the relationship of this measure to the industry MFP trends:

$$\boldsymbol{MFP}_T = \Sigma_{j=1}^{n} (VY_j/VS_T)\, \boldsymbol{MFP}_j \ .$$

The individual terms in this sum represent individual industry contributions to aggregate MFP. Now the sum of these weights exceeds 1.00:

$$\Sigma_{j=1}^{n} (VY_j/VS_T) = 1.00 + \Sigma_{j=1}^{n} \Sigma_{i=1}^{m} VN_{i,j,t} / VS_T \ .$$

This may seem counterintuitive, but intermediate transactions contribute to aggregate productivity by allowing productivity gains in successive industries to augment one another.[13]

However, Domar effectively assumed that the value of output equals the total cost of factor inputs. In the BLS aggregate multifactor productivity work and in Section III.a of this paper business, property taxes and business motor vehicle fees are assigned to capital costs, but other indirect business taxes are not assigned to any specific factor of production. Subsidies are also unassigned to input factors, and are included in TC with a

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[12] For its business and nonfarm business sector MFP measures, BLS output is derived from GDP without restoring F, and, in calculating MFP, this is compared to inputs of capital and labor. While BLS does not employ the sectoral treatment of imported intermediates (F), the MFP measures are almost the same as if it did. For the sectoral treatment, F would need to be restored to output and included with inputs using the same weight, and as a consequence it would lower the MFP trend just slightly.

[13] For example, suppose there is a one percent MFP increase in the leather industry and a one percent MFP increase in the shoe industry. Further suppose that shoes are the only final good in an economy and that leather represents half the cost of making shoes. Then the economy experiences a 1.5 percent productivity gain as the result of productivity advances in both industries.

negative sign. Production theory would recommend this treatment for taxes and subsidies that do not affect firms' costs for specific factors. The treatment parallels that of the BLS multifactor productivity work. In this context:

$$\boldsymbol{MFP}_T = \Sigma_{j=1}^{n}(VY_j/VS_T)\boldsymbol{MFP}_j - \Sigma_{j=1}^{n}((OIBT_j-SUB_j)/VS_T)\boldsymbol{I}_j$$

$$= \Sigma_{j=1}^{n}(VY_j/VS_T)\boldsymbol{S}_j - \Sigma_{j=1}^{n}[(VY_j+OIBT_j-SUB_j)/VS_T]\boldsymbol{I}_j$$

Note that if all $OIBT_j$-SUB_j=0, then Domar's equation holds. While perhaps inappropriate, this could be ensured by assigning all of OIBT and SUB to specific factor's costs. However, if the sum IBT_j-SUB_j is positive, and if inputs are growing, then the aggregate MFP trend will be slightly lower than the Domar-weighted average of industry MFP trends.[14] Also note that any other circumstance causing measured factor input costs to differ from the measured value of output in this model, such as a statistical discrepancy, will act like OIBT-SUB in affecting the relationship between industry and aggregate.[15]

II.c Adapting the Account to Different Large Sectors: Total Economy and Business

As indicated in section I, BEA measures GDP for the "total" economy while the largest subset of the economy for which BLS measures MFP is the private business sector.[16] Private business output excludes the following activities from GDP: general government, government enterprises, private households, nonprofit institutions and the

[14] If OIBT-SUB is typically 7 percent pro rata on the value of industry output, then for each additional percent of input growth, the industry must produce 1.07 percent more output to pay for it. The BLS aggregate MFP measures would exclude the extra .07 percent. In terms of production theory, the .07 is treated as a scale effect that is excluded from the measure of the production function shift, MFP.

[15] Note that BLS has not used the Domar equation to attribute productivity to industries in its publications, However, Gullickson and Harper (2002) did use the Domar equation, in its original form, to compare their exploratory nonmanufacturing industry multifactor productivity estimates to the published BLS aggregate measures.

[16] In a later section the relationship between BEA GDP and BEA/BLS private business sector output is discussed. BLS's quarterly labor productivity measures refer to the business sector which includes government enterprises.

rental value of owner occupied dwellings. BLS excludes these activities from productivity measures because in most cases inadequate data exists to construct output estimates independently of input costs.[17] BEA includes these activities in GDP because its goal is to measure all current production in the United States.

The alterations to the nominal production account for the total economy needed to convert the account to one for one of its subsectors, such as business, are described next. The alterations described can be applied to the problem of how to remove an industry or activity from any larger sector's production account. The technique could be applied to removal of a sequence of industries or activities, such as governments and nonprofit institutions, or it could be reversed to understand how to enlarge the sector, perhaps to include selected household activities. The alterations are designed to create a complete production account for both sector and subsector, that is, to use the same general equations for measuring real inputs, outputs and productivity that were developed in Section II.a and II.b.

The alterations treat the industry, M, being removed from the sector as exogenous to the remaining subsector. First the row and column associated with industry, M, are removed from the matrix VN. When the column (industry M's costs) is removed from VN, the labor and capital inputs purchased by M will vanish from the account all together, as depicted in Figure 3. However, the intermediate inputs purchased by industry M ($VN_{i,j,M}$) become sector outputs of the remaining subsector. The column of the larger sector's outputs, VS, are replaced with a column of the subsector's outputs, VSX, where $VSX_{i,j} = VS_{i,j} + VN_{i,j,M}$ (for all $j \neq m$). The output rows associated with

[17] The output values for general government, nonprofit institutions, and rental housing are estimated by identifying them with factor costs. The value of government enterprise output is measured in terms of revenues, but revenues scarcely account for labor costs because capital is heavily subsidized. The prices used to deflate all five types of product are formulated, at least partly, in terms of input costs.

industry M, $VN_{i,M,k}$, are removed from VN but are appended below as rows of commodity costs, similar to the treatment of imports. A block of exogenous cost rows, $C_{i,M,k}$, one for each commodity, i, that industry M produces, are created showing which industries, k, are buying the commodities. The flexible scope of this formulation of production accounts will facilitate determining how to treat various outputs and inputs as emphasis shifts from the total economy to a major subsector, such as private nonfarm business or manufacturing.

Figure 1: Matrix of Flows of Intermediate Inputs Between Industries

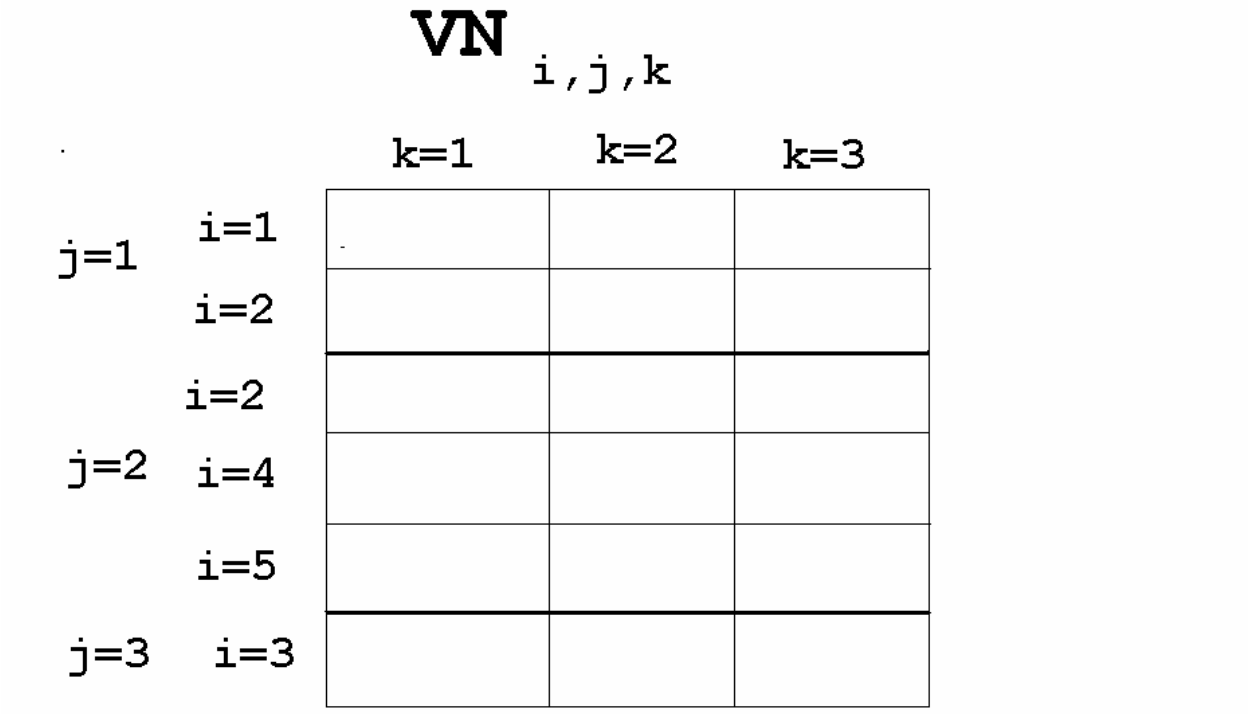


Figure 2: The Nominal Production Account

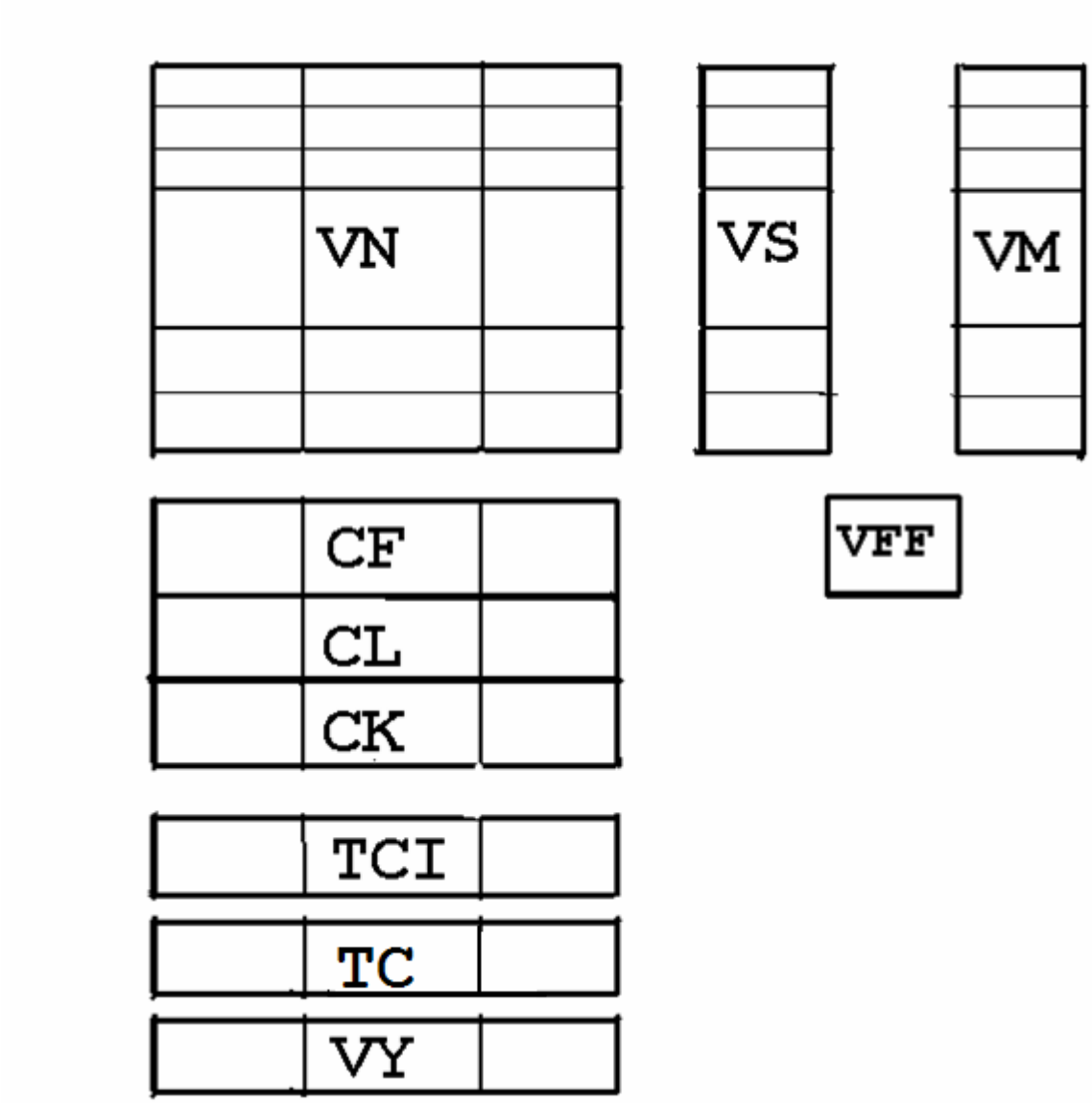
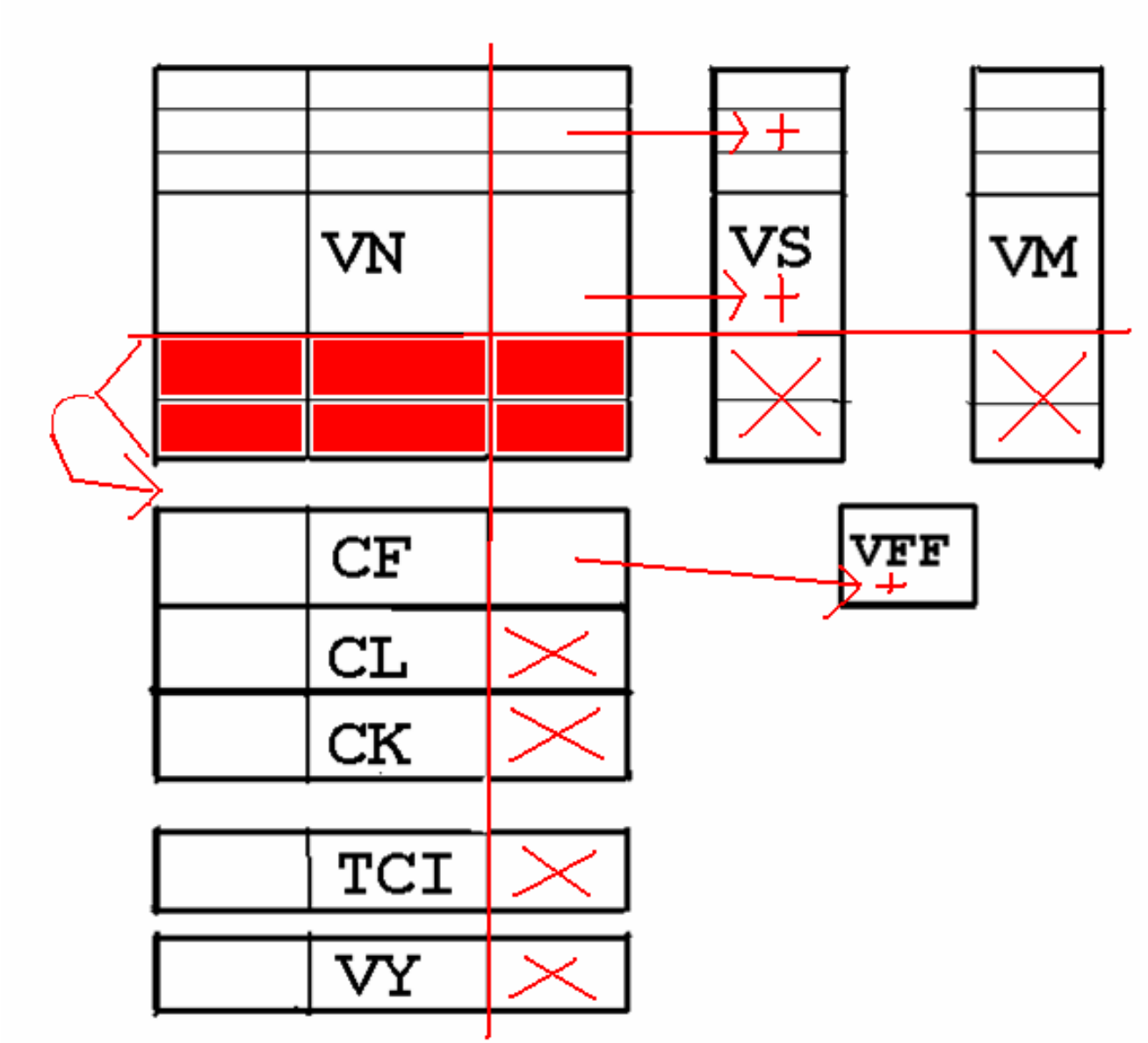


Figure 3. Modifications of the Nominal Production Account to Address a Sub-sector, such as the Business Sector of the Total Economy



III. Illustrative Integrated Production Account

The U.S. statistical system is largely decentralized. Production data come from three statistical agencies -- BEA, BLS, and the Bureau of the Census (Census) -- as well as from other sources. Accordingly, constructing an integrated aggregate production account requires an interagency joint effort, which BEA and BLS have undertaken. Most of the aggregate production data are either compiled by BLS or are compiled by BEA and then used by BLS for its multifactor productivity estimates. This section first discusses the productivity-related estimates produced by BEA and by BLS, and the source data underlying those estimates. It then presents the illustrative aggregate production account and briefly analyzes the components of this account.

III.a An Aggregate Production Account

Table 1 presents the illustrative aggregate production account for 1996.[18] This account shows the relationship between GDP and the two major sectors for which BLS provides estimates of multifactor productivity: the private business sector and the private nonfarm business sector. Estimates are in billions of dollars; since 1996 is the base year the nominal dollar value is equal to the real value for that year.

The historical data presented in this section and in the rest of the paper were considered current by both BEA and BLS between April 8, 2003 and September 17, 2003. They pre-date the BEA Comprehensive Revision to the National Income and Product Accounts (NIPA) of December, 2003, and the corresponding revision to the BLS Productivity and Cost series. The industry data presented in Section IV are all on a Standard Industrial Classification basis and pre-date the switching of any of the BEA or

[18] Note: In Table 1, MFP refers to BLS Private Business and Private Nonfarm Business MFP Tables on the web at http://www.bls.gov/web/prod3.supp.toc.htm. The GDP by Industry data table is on the BEA web site at http://www.bea.gov/bea/dn2/gpoc.htm .

Table 1
Aggregate Production Account, 1996
(Billions of dollars)

1. Gross Domestic Product (NIPA Table 1.7, line 1)	**7813.2**	
2. - Households and Institutions (NIPA Table 1.7, line 7)	348.6	
2a. Private Households (NIPA Table 1.7, line 8)		12.0
2b. + Nonprofit Institutions Serving Individuals (NIPA Table 1.7, line 9)		336.5
3. - General Government (NIPA Table 1.7, line 10)	908.7	
4. = Gross Domestic Business Product (NIPA Table 1.7, line 2)	**6556.0**	
5. - Owner-occupied Housing (NIPA Table 8.21, line 172)	487.1	
6. - Rental Value of Nonresidential Assets Owned and Used by Nonprofit Institutions Serving Individuals (NIPA Table 8.21, line 173)	49.8	
7. = BEA/BLS Business Sector Output	**6019.0**	
8. - Government Enterprises	111.8	
8a. Federal (BEA GDP by Industry Table, line 80)		54.9
8b. State and Local (BEA GDP by Industry Table, line 83)		56.9
9. = BEA/BLS Private Business Sector Output	**5907.2**	
9a. Statistical and Other Discrepancies		32.7
9b. + BLS Total Factor Costs plus Taxes (MFP Table PB1a, Current Dollar Output)		5874.5
9b-i. BLS Cost of Capital Services (MFP Table PB1a, Capital Income)		1839.8
9b-ii. BLS Labor Compensation (MFP Table PB1a)		3600.7
9b-iii. Indirect Business Taxes, Less Portion Assigned to Capital Services, Plus Subsidies		434.0
10. - Farms (NIPA Table 1.7, line 6)	92.2	
11. + Farm Space Rent for Owner-occupied Housing (NIPA Table 8.21, line 114)	5.8	
12. – Farm Intermediate Inputs for Owner-occupied Housing (NIPA Table 8.21, line 117)	1.0	
13. = BEA/BLS Private Nonfarm Business Sector Output	**5819.8**	
13a. Statistical and Other Discrepancies		32.7
13b. + BLS Total Factor Costs plus Taxes (MFP Table NFB1a, Current Dollar Output)		5787.1
13b-i. BLS Cost of Capital Services (MFP Table NFB1a, Capital Income)		1776.1
13b-ii. BLS Labor Compensation (MFP Table NFB1a, Labor Compensation)		3570.8
13b-iii. Indirect Business Taxes, Less Portion Assigned to Capital Services, Plus Subsidies		440.2

BLS industry output and productivity series to the North American Industrial Classification System (NAICS). Some of the detailed industry data have become available on a NAICS basis since the cutoff for this paper and others will be available soon.

All entries in the table, with the exception of the indirect business taxes entry, can be derived from BEA or BLS data available on each agency's web sites.[19] There are two cases for which this is not evident from the table. First, there are two entries labeled "Statistical and Other Discrepancies" (lines 9a and 13a). These entries are at most .1 different from the NIPA statistical discrepancy shown in NIPA Table 1.9, line 15. The "other" discrepancy results from the fact that the major sector multifactor productivity estimates are calculated from the bottom up, (i.e., from more detailed industry data), while the estimates shown in this table are calculated from the top down, (i.e., starting with GDP). As a result, rounding differences between these two approaches are included. Second, there are two entries labeled, "Indirect Business Taxes, Less Portion Assigned to Capital Services, Plus Subsidies" (lines 9b-iii and 13b-iii).

Before the December 2003 NIPA comprehensive revision, BEA defined business product differently than BLS. This paper -- including Table 1 -- uses pre-2003 NIPA comprehensive revision data and definitions for multifactor productivity estimates. Incorporating the 2003 comprehensive revision data will not be completed until late 2005. BLS excludes from business product (line 7) all production by households, nonprofit institutions serving individuals, and general government.[20] Before the comprehensive revision, BEA included owner-occupied housing (line 5) and the rental

[19] All table entries labeled "NIPA" are available from the BEA web site.
[20] Nonprofit institutions serving business are included in business product by both BEA and BLS; this is a small number.

value of nonresidential assets owned and used by nonprofit institutions serving persons (line 6) in business product (line 4).[21] Adopting the BLS definition of business product was a strategic decision by BEA to harmonize the BEA and BLS accounts to facilitate their use.

The most highly aggregated sector for which BLS estimates multifactor productivity is the private business sector, because of the previously noted difficulty of estimating output independently of inputs for the household, nonprofit institutions, and government sectors. Government enterprise product (line 8) from BEA's GDP by Industry accounts program is deducted from business sector output to arrive at private business sector output (line 9). The detail under lines 9 and 13 are the input side of the production account for the two major sectors for which BLS prepares estimates of multifactor productivity on an annual basis. Lines 10 through 12 deduct farms from the private business sector to arrive at private nonfarm business sector output. Farm owner-occupied housing in line 5 excludes intermediate inputs; farms in line 10 include owner-occupied housing and exclude intermediate inputs; and farm space rent for owner-occupied housing in line 11 includes intermediate inputs. The adjustments in lines 11-12 therefore ensure that nothing is subtracted twice and that intermediate inputs are excluded from output.

For many years BLS has estimated both capital and labor inputs (lines 9b-i and 9b-ii, and lines 13b-i and 13b-ii, respectively) within a production account. The possibility of constructing capital services as a measure of capital input for inclusion in a

[21] See Moulton and Seskin (2003), p. 29.

revised SNA is being discussed at the Canberra II meetings.[22] BLS already estimates capital services and was one of the first statistical agencies in the world to do so. The GDP by Industry accounts program of BEA provides nominal estimates of labor compensation, property-type income, and indirect business tax and nontax liability by industry. From these estimates, BLS determines the allocation of proprietor's income between capital and labor income in order to derive nominal capital services using the methodology described above in section II.a.1. In addition, BLS determines the amount of indirect business taxes, e.g., business property taxes and business motor vehicle licenses, to be allocated to capital services as shown in Table 1.

III.b Major Components of the Illustrative Aggregate Production Account

Table 2 shows the nominal shares of GDP and the real growth rates for selected components and major sectors (shown in bold) of the illustrative aggregate production account. Although the identifying labels such as "BEA/BLS" are continued from Table 1, the BEA and BLS estimates may differ. In addition, not all of the components are available for all years 1948-2001, and in some cases 1996 dollar estimates are not directly available for any year on the BEA or BLS web site.[23] Between 1948-1973 and 1973-1990, the nominal shares of the major sectors (shown in bold) in GDP decreased. This reflects the fact that the nominal share of the GDP components that are excluded from the private business sector increased during 1973-1990. For nonprofit institutions serving individuals and owner-occupied housing, the shares continued to rise between 1973-1990 and 1990-1995, but then are nearly constant. For general government, the

[22] Canberra II is a continuation of Canberra I. The latter worked to produce a capital manual as a companion piece to SNA 1993. See OECD (2001) and Commission of the European Communities - Eurostat, et. al. (1993).

[23] Implicit deflators were calculated in several cases from figures available on the BEA or BLS web sites.

Table 2
Major Components of the Aggregate Production Account
Nominal Shares and Real Growth Rates

	1948-2001		1948-1973		1973-1990		1990-1995		1995-2000		2000-2001	
	Share of GDP*	Growth Rate	Share of GDP*	Growth Rate	Share of GDP*	Growth Rate	Share of GDP*	Growth Rate	Share of GDP*	Growth Rate	Share of GDP*	Growth Rate
BEA Gross Domestic Product	1.000	3.4%	1.000	4.0%	1.000	2.9%	1.000	2.4%	1.000	4.0%	1.000	0.3%
Nonprofit Institutions Serving Individuals	0.028	3.9%	0.020	4.6%	0.033	3.6%	0.041	3.3%	0.043	2.7%	0.043	3.1%
General Government	0.107	2.1%	0.118	3.0%	0.129	1.6%	0.122	0.3%	0.115	1.1%	0.112	2.1%
BEA Gross Domestic Business Product	0.859	3.6%	0.856	4.1%	0.835	3.1%	0.835	2.7%	0.841	4.5%	0.844	-0.1%
Owner-occupied Housing	0.048	3.9%	0.042	2.8%	0.057	6.3%	0.063	2.8%	0.063	3.1%	0.064	1.7%
BEA/BLS Business Sector Output	0.807	3.6%	0.811	4.0%	0.772	3.1%	0.766	2.8%	0.772	4.7%	0.774	-0.2%
Government Enterprises	0.012	2.2%	0.012	3.2%	0.014	1.3%	0.015	-0.5%	0.014	3.4%	0.014	-0.9%
BEA/BLS Private Business Sector Output	0.795	3.6%	0.799	4.0%	0.758	3.1%	0.752	2.8%	0.758	4.7%	0.760	-0.2%
Farms	0.047	2.2%	0.061	1.1%	0.025	3.3%	0.012	0.3%	0.009	7.1%	0.008	-5.1%
BEA/BLS Private Nonfarm Business Sector Output	0.750	3.6%	0.741	4.2%	0.734	3.1%	0.741	2.8%	0.749	4.6%	0.753	-0.1%

share decreased over each of the last three subperiods shown. The government enterprise share varies little over time.

The share of the private nonfarm business sector in GDP declined less than the shares of the other major sectors during 1973-1990, and was larger in 2000-2001 than in 1948-1973. This is because the farm share of GDP decreased from 6.1 percent in 1948-1973 to 0.8 percent in 2000-2001, which offset the increases in the other excluded components. The drop in the farms share is very significant from 1948-1973 to 1973-1990. While the farms share continued to decline at a rapid rate between 1990-1995, 1995-2000 and 2000-2001, the share had become so small that it no longer had much impact on the private nonfarm business share. The share of the private business sector in GDP continued to decline between 1973-1990 and 1990-1995, but then returned to the 1973-1990 level.

The real growth rates of the major sectors are very similar, differing by at most .2. For the period as a whole and the middle subperiods: 1973-1990, 1990-1995, and 1995-2000, the real rates of growth of the major sectors are higher than the real growth rate of GDP. This is largely because of the lower real growth rates of the two government components. The real growth rates for these components are always below that of GDP with the exception of general government for 2000-2001. In 1948-73, the real growth rates of the major sectors are very similar to that for GDP; in 2000-2001 they are negative while real GDP grew slightly. Nonprofit institutions serving individuals, general government, and owner-occupied housing all grew significantly faster than the major sectors in 2000-2001; these sectors bolstered the growth of real GDP relative to the major sectors. The real growth rate of nonprofit institutions serving individuals is consistently

strong compared to that for GDP, except in 1995-2000. Owner-occupied housing real growth rates show no consistent pattern. The real growth rate for farms is the highest of any sector in 1995-2000, but the lowest of any sector in 2000-2001.

III.c BLS Major Sector Multifactor Productivity Accounts

Table 3 focuses on nominal shares and real growth rates for the detailed components of the BLS major sector multifactor productivity accounts. The rates of multifactor productivity change are also given.

As expected, the capital services share of nominal output is always about one-third and that of labor input is about two-thirds, but there is some variation in the shares across major sectors and across time. The capital services share is always slightly lower for the private nonfarm business sector than for the private business sector. The trends are similar for the major sectors including and excluding farms. Between 1948-1973 and 1973-1990 the shares are essentially stable; they increase significantly between 1973-1990 and 1990-1995, then drop into the second half of the nineties, followed by a more significant drop between 1995-2000 and 2000-2001. The labor input shares are simply a reflection of the capital services shares as the nominal shares always sum to 1.0.

The capital services and labor input real growth rates for private nonfarm business are always equal to or above those for private business. The subperiod differences between the capital services real growth rates of private business and private nonfarm business are equal to or greater than the difference between the labor input real growth rates of these major sectors except in 1948-1973. The labor input growth rate difference of .5 in 1948-1973 is a very significant difference as it represents a 50% increase of the private nonfarm business rate over that for private business. Aside from this sub period,

Table 3
BLS Private Business and Private Nonfarm Business Sectors
Inputs & Rates of Multifactor Productivity Change
Nominal Shares and Real Growth Rates

	1948-2001		1948-1973		1973-1990		1990-1995		1995-2000		2000-2001	
	Share of Sector	Growth Rate	Share of Sector	Growth Rate	Share of Sector	Growth Rate	Share of Sector	Growth Rate	Share of Sector	Growth Rate	Share of Sector	Growth Rate
BEA/BLS Private Business Sector Output	n.a.	3.6%	n.a.	4.0%	n.a.	3.1%	n.a.	2.8%	n.a.	4.7%	n.a.	-0.2%
BLS Private Business Sector Input	n.a.	2.2%	n.a.	1.8%	n.a.	2.6%	n.a.	2.1%	n.a.	3.3%	n.a.	0.9%
BLS Capital Services	0.320	3.9%	0.319	3.7%	0.318	4.1%	0.328	2.8%	0.324	5.3%	0.315	4.1%
BLS Labor Input	0.680	1.4%	0.681	1.0%	0.682	1.9%	0.672	1.9%	0.676	2.4%	0.685	-0.5%
BLS Rate of Multifactor Productivity Change	n.a.	1.3%		2.1%		0.5%		0.6%		1.3%		-1.0%
BEA/BLS Private Nonfarm Business Sector Output	n.a.	3.6%	n.a.	4.2%	n.a.	3.1%	n.a.	2.8%	n.a.	4.6%	n.a.	-0.1%
BLS Private Nonfarm Business Sector Output	n.a.	2.5%	n.a.	2.2%	n.a.	2.7%	n.a.	2.2%	n.a.	3.5%	n.a.	1.0%
BLS Capital Services	0.315	4.1%	0.306	4.0%	0.305	4.4%	0.321	2.9%	0.319	5.5%	0.311	4.1%
BLS Labor Input	0.685	1.7%	0.694	1.5%	0.695	2.0%	0.679	1.9%	0.681	2.5%	0.689	-0.5%
BLS Rate of Multifactor Productivity Change	n.a.	1.1%	n.a.	1.9%	n.a.	0.3%	n.a.	0.6%	n.a.	1.1%	n.a.	-1.0%

the difference is no greater than .1 percentage point. Finally, the capital services real growth rate for the periods shown is always greater than the labor input real growth rate for both major sectors.

The rate of multifactor productivity change shows trends and relationships documented elsewhere by BLS and others.[24] The drop between 1948-1973 and 1973-1990 is often called the "productivity slowdown". The resurgence in 1995-2000 occurs in the subperiod associated with the new economy and is often called the "productivity revival." The negative multifactor productivity change in 2000-2001 may be a reflection of the recession dated as beginning in March 2001. In every subperiod, multifactor productivity change for the private business sector is equal to, or greater than, that for the private nonfarm business sector, reflecting ongoing strong productivity growth in the farm sector.

IV. Comparison of BEA and BLS Output Measures for Sectors and Industries

BEA and BLS both provide output measures for broad sectors of the economy and for industries that are widely used to study economic growth, productivity, and structural change. Although these output measures are fairly consistent with one another, and usually tell similar stories about trends in economic growth, there are some differences. BEA and BLS have worked closely to achieve consistency. For example, when BEA introduced annually chained indexes to the U.S. national income and product accounts (NIPA's) in 1996, BLS--after close consultation between the agencies--began to base its productivity measures for the business and nonfarm

[24] The rate of MFP change is equal to the growth rate of output minus a weighted growth rate of inputs. The weights are computed from the BLS Factor Cost of Capital Services and BLS Labor Compensation time series, e.g., in Table 1 lines 9b-i and 9b-ii, and 13b-i and 13b-ii. Accordingly, the statistical and other discrepancies, e.g., lines 9a and 13a in Table 1, and Indirect Business Taxes, Less Portion Assigned to Capital Services, Plus Subsidies, e.g., lines 9b-iii and 13b-iii, do not enter into the calculation.

business sectors on estimates from the product side of the NIPAs.[25] Also around the same time BEA and BLS worked closely to develop a common set of output price indexes for all manufacturing industries.[26] Each year, BLS sends BEA a table of price deflator series for every 5-digit product class in manufacturing. While progress has been made, differences remain, especially outside of manufacturing.

Differences in output measures reflect differences in definition, coverage, and methodology that are primarily due to different purposes for the measures. For example, BEA strives to provide complete and consistent coverage of the entire economy in the NIPA's, whereas BLS primarily seeks maximum reliability in its various measures of productivity. These differing goals are not necessarily inconsistent with one another, since both require reliable output measures, but they can lead to differences in definition and coverage as well as in methodology. A part of the differences, especially at detailed industry levels, reflects different choices for underlying source data and aggregation techniques. This section describes the key sources of difference among the output measures for major sectors, for broad manufacturing industry groups, and for selected detailed industries in both manufacturing and nonmanufacturing.

The focus in this section of the paper is on sources of difference in output measures as it is a useful starting point for comparisons. Tables 4 through 11 compare growth rates of the BEA and BLS output measures. Most tables present average annual growth rates for 1990-1995 and for 1995-2000, and the annual growth rate for 2001, the latest year for which most of the output measures are available. Because of the interest in the acceleration of productivity growth after

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[25] The product side differs from the income side of the NIPA's by the statistical discrepancy.
[26] BEA and BLS also met in 2001 to discuss reducing differences for nonmanufacturing industries.

1995, and because of the sharp slowdown in growth in 2001, most tables also present the acceleration in average annual output growth between 1990-1995 and 1995-2000.

IV.a Major Sectors

Tables 4 and 5 present real and nominal output measures for the entire economy and for major sectors such as nonfarm business and private nonfarm business. These measures are drawn from BEA's NIPA's, from the BLS major sector productivity measurement program, and from BEA's GDP by Industry Accounts. In the NIPA's, real GDI accelerated much faster than real GDP in the 1995-2000 period (1.96 vs. 1.65 percentage points) because GDI excludes the statistical discrepancy, which became increasingly negative during the latter part of the 1990's. In the nonfarm business sector, BEA's NIPA measure accelerated more slowly than the BLS measure (1.79 vs. 1.92 points) because BEA includes both owner-occupied and tenant-occupied housing services, whereas BLS includes only tenant-occupied housing.[27] BEA's measure for nonfarm business less housing accelerated 1.98 points.

Turning to the BEA Industry Accounts, it is important to note that the value-added output of "All Industries" is conceptually equivalent to GDP measured as the sum of final expenditures, and that nominal value-added for "All Industries" equals nominal GDP from the NIPA's. As a result, nominal growth rates and their acceleration (or deceleration) are identical for "All Industries" and for NIPA GDP. (See Table 5.) Real growth rates can differ substantially, however, because of differences in the source data and deflation procedures used for the two measures. Real output for "All Industries" accelerated much faster than GDP (1.97 points vs. 1.65 points). The faster acceleration for "All Industries" represents the combined effects of slower growth in the 1990-1995 period and faster growth in the 1995-2000 period.

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[27] Nonfarm owner-occupied housing accounted for 7.5 percent of BEA nonfarm business output in 1996.

A difference of comparable magnitude arises between nonfarm business output computed from BEA's Industry Accounts and the BLS measure. Although the industry-based measure of nonfarm business is not published by BEA, some analysts compute it from the published GDP by Industry data in order to determine industry contributions to nonfarm business growth. Measures that are computed from BEA's Industry Accounts data are not exactly equivalent to the BLS measure, however, because tenant-occupied housing services cannot be separately identified in the BEA data; as a result, most analysts exclude all nonfarm housing services. In addition, the Industry Accounts measure includes nonprofit institutions serving persons, which are excluded from the NIPA and BLS measures.[28] These institutions are embedded in the source data for several industries and cannot be identified separately. Finally, and perhaps most importantly for recent periods, some analysts exclude the statistical discrepancy from the Industry Accounts data in order to construct a pure income-side measure, which further widens the gap in real growth rates.

[28] BLS business sector output excludes the compensation of employees of nonprofit institutions serving persons (line 2b in Table 1) and the rental value of nonresidential assets owned and used by nonprofit institutions serving individuals (line 6 in Table1). BEA business sector output excludes only the compensation of employees of these institutions.

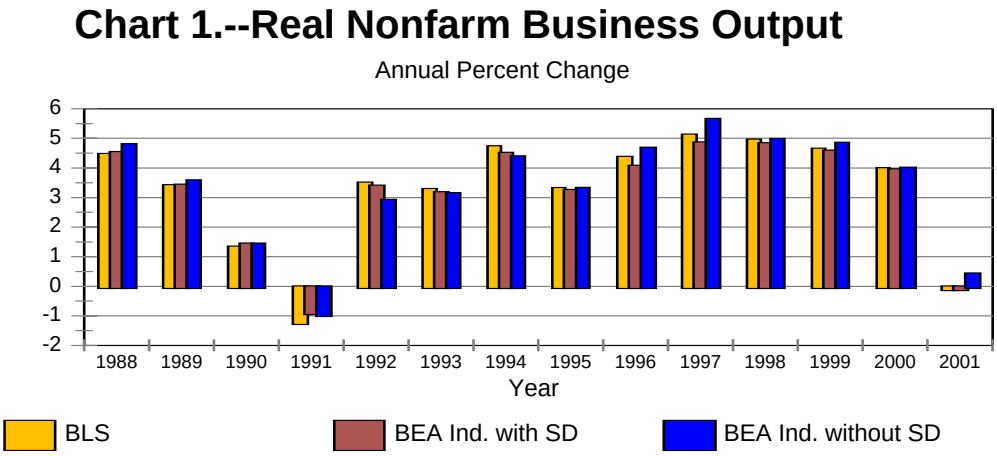

Chart 1 shows the annual percent change in selected real output series for nonfarm business output from 1987-2001. Annual changes in the BLS series and the BEA Industry Accounts series with the statistical discrepancy (Ind. w/SD) match very closely over the entire period. Changes in the BEA Industry Accounts series *without* the statistical discrepancy (Ind w/out SD) match the other two series closely in some years, but are usually different. Faster growth is most evident in 1997 and 2001.

Acceleration in the BEA Industry Accounts measure for nonfarm business *excluding* the statistical discrepancy exceeded the BLS nonfarm business measure by 0.75 points (Table 4: 2.67 vs. 1.92). The exclusion of the statistical discrepancy and differences in deflation procedures contributed roughly equal amounts (0.4 points) to the difference. Differences in definition and coverage (i.e., nonprofit institutions and tenant-occupied housing) are small and on balance reduced the overall difference. The following table summarizes an approximate accounting for the sources of difference in average real growth rates and their acceleration (all in percentage points) during the 1990's:

	1990-95	1995-00	1995-00 less 1990-95
BEA Industry Accounts	2.61	5.27	2.67
BLS Nonfarm Business	2.71	4.63	1.92
Industry Accounts less BLS	-0.11	0.64	0.75
Statistical discrepancy	0.05	0.46	0.41
Definition and coverage	0.09	0.04	-0.05
Deflation procedures	-0.25	0.14	0.39

Most of the difference in the acceleration of real output growth is due to the faster growth in the BEA Industry Accounts measure during 1995-2000 (0.64 points), which is largely due to the exclusion of the statistical discrepancy (0.46 points). Differences in deflation procedures resulted in slower growth in the Industry Accounts deflator, which contributed 0.14 points. In the 1990-1995 period, the BEA Industry Accounts measure grew slower than the BLS measure. This slower growth is more than accounted for by the differences in deflation procedures, which contributed –0.25 points because of faster growth in the Industry Accounts deflator.

Differences in deflation procedures between the measures reflect differences in source data, deflation level of detail, and aggregation methods. Real GDP and NIPA/BLS nonfarm business output are quantity indexes derived by Fisher aggregation over the detailed types of deflated final expenditures. The value-added quantity indexes from BEA's Industry Accounts are computed using the double-deflation method and Fisher aggregation over the relevant group of industries. The statistical discrepancy is deflated with BEA's business sector price index. Compared with the NIPA price indexes, implicit price deflators for "All Industries" and for nonfarm business from the Industry Accounts increased faster in the 1990-1995 period and slower in the 1995-2000 period.

IV.b Manufacturing Sectors

Tables 6 and 7 compare real and nominal output growth rates for all manufacturing, durable goods, and nondurable goods. Both tables include the BLS sectoral output measures and the BEA measures for gross output and value added. Table 6 also includes the Federal Reserve Board's Industrial Production Index (IPI), which is used in the BLS labor productivity program for quarterly and recent period output estimates. For all of manufacturing, both the BLS sectoral output measure, which excludes intrasectoral transactions, and the BEA gross output measure, which includes intrasectoral transactions and other adjustments, accelerated much less than BLS private nonfarm business. Acceleration is slightly less in the BLS measure than in the BEA measure (1.00 vs. 1.15).

Comparable results also are obtained for the durable goods and nondurable goods sub-aggregates, with durable goods accelerating more than 2 percentage points and nondurable goods decelerating slightly, according to both measures. Acceleration in the BEA value added measure for manufacturing, which excludes intermediate inputs such as energy, materials, and purchased services, is quite similar to the other measures, but the differences are larger for the subgroups. Durable goods accelerated faster and nondurable goods decelerated faster than in the other output measures. Acceleration in the FRB IPI is much higher (2.67 points on the SIC basis) for manufacturing, primarily because of a much faster acceleration for durable goods.[29] Deceleration for nondurable goods in the IPI is similar to that in the BLS and BEA measures.

[29] The FRB IPI is provided on both the SIC basis and the NAICS basis for total manufacturing. Durable goods and nondurable goods are provided only on the NAICS basis.

Chart 2. -- Real Manufacturing Output

Selected Series, 1996 = 100

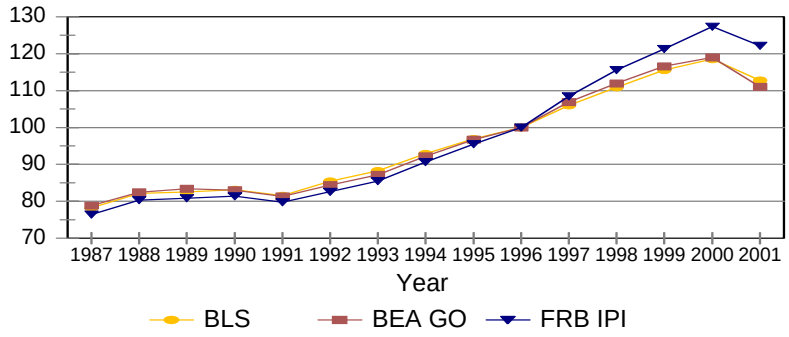

Chart 2 presents selected series for real manufacturing output from 1987-2001. The BLS sectoral output series and the BEA gross output (GO) series track one another very closely over the entire period. The FRB IPI series follows the BLS and BEA series very closely through 1997, but then begins to grow faster than the other series after 1997. This divergence is primarily due to much faster growth for durable goods in the FRB series.

Table 7 provides some insight into the impact of the definitional and coverage differences between the BEA and BLS output measures, because nominal estimates are not affected by differences in deflation and aggregation procedures. While differences in levels are not shown here, it is important to note that the nominal value of manufacturing BLS sectoral production, BEA gross output and BEA value added differ significantly. This is not surprising, given the difference in the sectoral, gross and value added output concepts and their respective treatments of intermediates. In recent years, the BLS value of manufacturing sectoral production has averaged about 64 percent of BEA gross output and about 177 percent of BEA value added. Despite these important differences in the definition of output that affect levels, nominal growth rates and their acceleration are quite consistent, especially between BLS sectoral output and BEA gross output. The small differences in nominal growth rates sometimes lead to small differences

in real growth rates. BEA and BLS have minimized the impact of differences in deflation procedures in manufacturing by the use of a common database of product prices and by sharing some of the detailed components of nominal gross output.

IV.c Detailed Industry Comparisons

To further understand the magnitude and sources of differences among the output measures, BEA and BLS detailed industry output series are compared and the sources of differences among these series are explored. As noted above, differences may arise among output measures either due to differences in the choice of output concept or due to measurement issues. In empirically implementing an output measure, numerous decisions are made, including choices of source data, extrapolation techniques, aggregation methods, deflation procedures, and a host of possible adjustments such as for inventory change, resales, misreporting, coverage, drift, own-account production and commodity taxes.[30] The selection of output concept and the decisions regarding empirical measurement are driven both by the purpose for which the output measure is being developed and by underlying data limitations.

For the detailed industry comparisons, output measures from the BEA Industry Accounts GDP by Industry program, the BLS Office of Productivity and Technology industry productivity program, and the BLS Office of Productivity and Technology major sector productivity program (Gullickson-Harper output measures) are compared for those SIC 2-digit industries where more than one output measure is available.[31] In those industries where BEA and BLS output measures

[30] See Table A1 in the Appendix for a description of differences among the output series.

[31] The BEA gross output measures in this comparison are drawn from the BEA Industry Accounts GDP by Industry program rather than the BEA input-output program. The BLS Office of Productivity and Technology industry productivity program produces sectoral output measures for SIC 3- and 4-digit industries for use in production of industry productivity measures. The SIC based industry productivity program sectoral output measures were published or unpublished, depending on the quality of the measure, although all were available upon request. Starting with the 2003 data, all NAICS based 4-digit and above data from the industry productivity program is published. The BLS Office of Productivity and Technology major sector productivity program produces published

appear to have large differences, the output measures are further examined to assess whether the disparity results from differences in data sources, deflation methods, agency-specific adjustments, and/or output concept. For selected industry groups, sufficient data exists to relate differences in output measures at the SIC 2-digit level to differences in output measures for the underlying 3- and 4-digit level industries.

IV.c.1 Detailed Industry Output Comparisons

Comparisons are made among the real and nominal output growth rates of various BEA and BLS output measures for selected industries. These measures include: published and unpublished BEA gross output measures $\mathbf{Y}^{G}_{BEA\text{-}P}$ and $\mathbf{Y}^{G}_{BEA\text{-}U}$, published BLS sectoral output measures $\mathbf{Y}^{S}_{BLS\text{-}M\text{-}P}$ and unpublished BLS gross output measures $\mathbf{Y}^{G}_{BLS\text{-}M\text{-}U}$, and published and unpublished BLS sectoral output measures $\mathbf{Y}^{S}_{BLS\text{-}I\text{-}P}$ and $\mathbf{Y}^{S}_{BLS\text{-}I\text{-}U}$.[32]

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sectoral output measures for SIC 2-digit manufacturing industries and unpublished gross output measures for selected SIC 2-digit nonmanufacturing industries. These measures are presented and discussed in the articles "Measurement of Productivity Growth in U.S. Manufacturing," by William Gullickson, *Monthly Labor Review*, July 1995, pp. 13-27; "Possible Measurement Bias in Aggregate Productivity Growth, by William Gullickson and Michael Harper, *Monthly Labor Review*, February, 1999, pp. 47-67; and "Bias in Aggregate Productivity Trends Revisited," by William Gullickson and Michael Harper, *Monthly Labor Review*, March, 2002, pp. 32-40. The BEA and BLS output measures used in this paper were considered current by both BEA and BLS between April 8 and September 17, 2003.

[32]In this paper, a variety of output measures produced by BEA and BLS are compared. In some cases, these datasets may be aggregated or disaggregated to levels that the agencies do not publish for comparison purposes. In order to be clear at all times about which dataset is being discussed, which type of output concept is involved, and whether the data are published, the following notation has been developed:

$$\mathbf{Y}^{\textit{Output Concept , Aggregation Level}}_{\textit{Agency, Program, Status}}$$

where Output Concept indicates gross (G) or sectoral (S) output concepts; Aggregation Level indicates the SIC level of aggregation (2, 3, or 4-digit); Agency indicates BEA or BLS; Program indicates the BLS Major Sector productivity program (M) or the BLS Industry productivity program (I); and Status indicates whether the measure is published (P) or unpublished (U).

Differences in the real and nominal output growth rates are measured using two different approaches. The first approach is to calculate the difference in the acceleration of the average annual growth rate in 1990-1995 as compared to 1995-2000, for any two output measures. The difference in acceleration rates reflects differences in the change in the growth rate trends of the output measures between these two time periods. The second approach is to examine how closely the average annual growth rates of any two output series are correlated. The correlation coefficient, computed for the average annual growth rate of the output series from 1988-2000, reflects the consistency in the annual movements of the output measures over this time period.

To identify the sources of the differences among the output series, current dollar output series are compared to determine the role of differences in underlying data sources; constant and current dollar output series are compared to determine the role of differences in price indexes and price deflation methods; adjusted and unadjusted constant dollar output data is compared to determine the impact of agency-specific adjustments; and related gross and sectoral output series are compared to determine the role of differences in output concept. In addition, an effort is made to document the raw data sources, adjustments, price indexes and price deflation methods used, aggregation methods used, and so forth for each series. Differences found among output series at the more aggregate 2-digit level are, where possible, further explored by examining the underlying 3- and 4-digit industry output data and determining if any of the 3- or 4-digit industry output measures appear to differ as well. This case-study approach allows differences among output measures for SIC 2-digit industries to be traced to the underlying 3- and 4-digit industry

levels, where data permit. Table A2 summarizes the availability of the BEA and BLS output series by SIC 2-, 3-, and 4-digit industry.[33]

IV.c.2 SIC 2-digit Manufacturing Industry Differences

Detailed manufacturing industry measures produced by BEA and BLS are generally based on the common data structure of the Bureau of the Census current dollar value of shipments data, inventory change data, and value of resales data. Constant dollar output series are developed by each agency using similar price deflation procedures, according to a 1997 memorandum of agreement between BEA and BLS. Although the SIC 2-digit published BEA measures reflect a gross output concept, and the published BLS measures are based on a sectoral output concept, the measures are quite similar as a result of this common data source and price deflation agreement.

Output measures compared for the SIC 2-digit manufacturing industries include: (1) The $\mathbf{Y}^{G\text{-}2}_{BEA\text{-}P}$ measure is a gross output measure for SIC 2-digit industries, and includes adjustments to correspond to NIPA definitions.[34] (2) The $\mathbf{Y}^{S\text{-}2}_{BLS\text{-}M\text{-}P}$ measure is a sectoral output measure for SIC 2-digit industries, developed by BLS for use in measuring multifactor productivity in manufacturing industries. The sectoral output concept excludes sales of intermediate products and services between establishments within a particular sector (intrasectoral transactions) from

[33] For example, SIC 2-digit industries where comparisons among two or more of the BEA and BLS output series are possible include: SIC 10, 12, 13, 14, 20-39,40, 41, 42, 44, 45, 46, 47, 48, 49, 62, 63, 64, 67, 70, 72, 75, 78, 79, 80, and 82. SIC 3-digit industries where comparisons are possible include all 3-digit industries in the manufacturing industry groups 20-39 and in 43, 50, and 51; and selected 3-digit industries in industry groups 10, 14, 48, 52, 53, 54, 55, 56, 58, 72, 75, and 78. SIC 4-digit industry comparisons are possible for all 4-digit industries in the manufacturing industry groups 20-39 and in 43 and 58; and for selected 4-digit industries in industry groups 10, 57, 59, and 72.

[34] BEA published gross output is measured as the value of shipments plus inventory changes less the cost of resales, plus misreporting and coverage adjustments, plus adjustments for own-account production of software, own-account construction work, and commodity (sales) taxes. Adjustments for inventory change and cost of resales are made only for goods-producing industries.

the output measure. (3) The $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}I\text{-}U}$ measure is constructed for this paper. It is a sectoral output measure for SIC 2-digit industries, constructed by Tornqvist aggregation of BLS SIC 3-digit sectoral output measures. [35] This output measure, while constructed based on SIC 3-digit sectoral output measures, is not adjusted for additional intrasectoral transactions at the SIC 2-digit level, and also does not reflect many of the adjustments which are made to the $\mathbf{Y}^{G\text{-}2}{}_{BEA\text{-}P}$ output measure.[36]

Comparisons are made among the real output growth rates of these three output measures for selected SIC 2-digit manufacturing industries. In the manufacturing sector, eight of the twenty SIC 2-digit manufacturing industries are selected for further review. The criteria for further review are fairly subjective: each of these industries has either an acceleration difference of .90 or higher, or a correlation coefficient of .85 or less, for some combination of two of the three measures.[37] As seen in Table 8, the $\mathbf{Y}^{G\text{-}2}{}_{BEA\text{-}P}$ output measure and the $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}M\text{-}P}$ output measure exhibit differences in acceleration rates for SIC 20, 21, 31, 35, and 39 ranging from .94 to -1.23.[38] These measures also show differences in annual movements for SIC 20, 29, 38, and 39. The $\mathbf{Y}^{G\text{-}2}{}_{BEA\text{-}P}$ output measure and the $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}I\text{-}U}$ output measure exhibit differences in acceleration rates for SIC 27, 31, 35, and 39 ranging from .96 to -1.51 and have low correlation coefficients for SIC 27 and 29. The two BLS measures, $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}I\text{-}U}$ and $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}M\text{-}P}$, reflect differences in acceleration for SIC 20 and 27 of .96 and 1.92 respectively, and low correlation

[35] The sectoral measure for SIC 2-digit industries is constructed by Tornqvist aggregation of BLS SIC 3-digit sectoral output measures and contains no additional adjustments. The BLS sectoral output measures for SIC 3-digit industries are measured as the value of shipments plus inventory changes, less resales and intra-industry shipments.
[36] NAICS 3-digit sectoral output measures that exclude all intrasectoral transfers are now available from the BLS industry productivity program.
[37] The eight industries are SIC 20, Food and Kindred Products; SIC 21, Tobacco Products; SIC 27, Printing, Publishing and Allied Industries; SIC 29, Petroleum Refining and Related Industries; SIC 31, Leather and Leather Products; SIC 35, Industrial and Commercial Machinery and Computer Equipment; SIC 38, Measuring, Analyzing, And Controlling Instruments; Photographic, Medical And Optical Goods; Watches And Clocks; and SIC 39, Miscellaneous Manufacturing Industries.
[38] BLS output and productivity measures for SIC 21, Tobacco Products, and SIC 31, Leather and Leather products are unpublished because the output data for these industries is considered unreliable.

coefficients for SIC 20, 27, 38, and 39. Using these comparisons, BEA and BLS output measures for SIC industries 20, 21, 27, 31, 35, 38, and 39 are highlighted as having differences meriting further exploration.[39]

IV.c.3 SIC 2-Digit Nonmanufacturing Industry Differences

Although the nonmanufacturing sector accounts for about 80 percent of nonfarm business output excluding housing, data quality and industry detail are generally much less than for the manufacturing sector, and the comparability of BEA and BLS output measures is accordingly not as high as in manufacturing. The nonmanufacturing sector is a broad collection of diverse industries that includes goods-producing industries such as mining and construction and all of the services-producing industries. BEA provides complete coverage of the nonmanufacturing sector at approximately the two-digit SIC level, whereas the BLS industry productivity program provides output and labor productivity measures for a wide variety of selected industries for which data quality is high and reliable labor productivity estimates can be prepared.[40] As a result of the differences in objectives and priorities, coverage by BLS varies considerably across the nonmanufacturing sector.

Table 9 provides insight into the extent of coverage by the BLS industry productivity program by comparing the 1996 receipts of industries for which BLS provides productivity measures to BEA's published 1996 gross output. For each nonmanufacturing industry group, column 1 shows the sum of the BEA-derived receipts for those detailed industries for which BLS currently provides labor productivity measures. Column 2 shows the published BEA gross

[39] It is useful to note that SIC 21, Tobacco Products, and SIC 31, Leather and Leather Products, are particularly small industries as measured either by employment or gross domestic product.

[40] BLS also provides SIC 2-digit output and productivity measures for a broad range of industries for selected years in Gullickson and Harper (2002). These measures are prepared by the BLS major sector productivity program. For SIC 2-digit industries in the nonmanufacturing sector, these measures are considered unpublished, unofficial, measures.

output measure for the industry group, and the third column shows column 1 as a percentage of column 2.[41] Farms, nonfarm housing services, private households, and government are excluded for comparability with the nonfarm business sector.

For all of nonmanufacturing, receipts of industries covered by the BLS industry productivity program accounted for nearly one-half of gross output in 1996. Industry groups with complete or nearly complete coverage by BLS include mining, communications, electric, gas, and sanitary services, wholesale trade, and retail trade. Industry groups with partial coverage include transportation and services. BLS does not provide any output measures for agriculture and construction, and provides a measure only for commercial banks (part of depository institutions) in the FIRE group. Within the services group, BLS provides complete or nearly complete coverage for hotels and lodging places, personal services, and auto repair and services. No output measures are provided for industries with a large nonprofit component, such as health services, educational services, social services, and membership organizations.

BEA and BLS real output measures are compared for SIC 2-digit nonmanufacturing industries where two or more output measures are available.[42] These measures include: a published BEA gross output measure $\mathbf{Y}^{G\text{-}2}_{BEA\text{-}P}$, an unpublished BLS gross output measure $\mathbf{Y}^{G\text{-}2}_{BLS\text{-}M\text{-}U}$ and an unpublished BLS sectoral output measure $\mathbf{Y}^{S\text{-}2}_{BLS\text{-}I\text{-}U}$. As with manufacturing, trend growth rates for 1990-95 and 1995-00 are compared by industry, and

[41] BEA gross output includes commodity taxes, own-account production, and adjustments for misreporting and coverage that are included at the publication level, but that are not included in the detailed industry receipts measures. As a result, the percentage in column 3 will always be less than 100 percent, even when all of the detailed industries in a group are covered by BLS.

[42] These industries include: SIC 10, Metal Mining; SIC 12, Coal Mining; SIC 13, Oil and Gas Extraction; SIC 14, Mining and Quarrying of Nonmetallic Minerals, Except Fuels; SIC 40, Railroad Transportation; SIC 41, Local and Suburban Transit and Interurban Highway Passenger Transportation; SIC 42, Motor Freight Transportation and Warehousing; Sic 44, Water Transportation; SIC 45, Transportation by Air; SIC 46, Pipelines, Except Natural Gas; SIC 47, Transportation Services; SIC 48, Communications; SIC 49, Electric, Gas, and Sanitary Services; SIC 62, Security and Commodity Brokers, Dealers, Exchanges, and Services; SIC 63, Insurance Carriers; SIC 64, Insured Agents, Brokers, and Service; SIC 70, Hotels, Rooming Houses, Camps, and Other Lodging Places; SIC 72, Personal Services; SIC 75, Automotive Repair, Services, and Parking; SIC 78, Motion Pictures; SIC 79, Amusement and Recreation Services; SIC 80, Health Services; and SIC 82, Educational Services.

differences in acceleration between these two time periods are calculated. Correlation coefficients are also calculated among output series.

Given the greater difference in data sources and methods which exists among the BEA and BLS output measures for SIC 2-digit nonmanufacturing industries, it is unsurprising that these measures differ from one another to a much greater extent and in a higher proportion of the industries than for manufacturing industries. Of the 22 SIC 2-digit nonmanufacturing industries examined, 16 display differences in acceleration between various output measures of greater than .90 for some combination of two of the three measures. As seen in Table 10, the $\mathbf{Y}^{G\text{-}2}{}_{BEA\text{-}P}$ measure and the $\mathbf{Y}^{G\text{-}2}{}_{BLS\text{-}M\text{-}U}$ measure exhibit differences in acceleration rates for SIC 10, 13, 41, 42, 44, 45, 46, 48, 49, 62, 63, 64, 72, 78, 79, and 82. For these 16 industries, 7 have a difference in acceleration ranging from .9 to 2.0; 3 industries have a difference in acceleration ranging from 2.0 to 3.0; 3 industries have a difference in acceleration ranging from 3.0 to 4.0; and 3 industries have a difference in acceleration ranging from 4.0 to over 7.0. The largest differences in acceleration tend to be in the transportation industries, and in pipelines except natural gas.

The $\mathbf{Y}^{G\text{-}2}{}_{BEA\text{-}P}$ and $\mathbf{Y}^{G\text{-}2}{}_{BLS\text{-}M\text{-}U}$ nonmanufacturing output measures show differences in annual movements for SIC 14, 40, 41, 42, 44, 45, 46, 47, 48, 49, 62, 63, 64, 75, 78, 79, and 82. The $\mathbf{Y}^{G\text{-}2}{}_{BEA\text{-}P}$ measure and the $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}I\text{-}U}$ are only compared for SIC 12, 13, 14, and 72 at the SIC 2-digit level, and have a difference in acceleration greater than .90 in SIC 13 and 72 as well as differences in annual movements in SIC 13. The $\mathbf{Y}^{G\text{-}2}{}_{BLS\text{-}M\text{-}U}$ and the $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}I\text{-}U}$ measures are compared for SIC 13, 14, and 72 as well, with the finding that these two measures have differences in acceleration and annual movements for SIC 13. Based on these comparisons, BEA and BLS output measures for the nonmanufacturing industries SIC 10, 13, 41, 42, 44, 45, 46, 48, 49, 62, 63, 64, 72, 78, 79 and 82 are highlighted as meriting further examination.

IV.c.4 Sources of Differences

BEA and BLS output measures for SIC 2-digit industries 12, 14, 22, 23, 24, 25, 26, 28, 30, 32, 33, 34, 36, 37, 70, 75, and 80 are found to be very similar in terms of the trend growth rates and annual movements in growth rates.[43] However, BEA and BLS output measures for SIC 10, 13, 20, 21, 27, 29, 31, 35, 38, 39, 40, 41, 42, 44, 45, 46, 47, 48, 49, 62, 63, 64, 72, 78, 79, and 82 appear to have large differences in trend growth rates for 90-95 and 95-00 and/or in annual growth rates. Possible explanations for differences among the output measures in the SIC 2-digit manufacturing and nonmanufacturing industry groups include differences in source data and deflation methods, differences in adjustments made to the source data, and differences in output concept.

IV.c.4.a. Source Data

Differences in the source data are examined by comparing current dollar data on BEA and BLS output measures using trend growth rates from 1990-95 and 1995-00 and correlation coefficients for available current dollar average annual percent change of output series. Where current dollar trend growth rates differ across output measures, and the correlation of current dollar annual growth rates between output measures is low, it would appear that the source data are fundamentally different. Current dollar data series for 20 of the 26 industries with differences in output measures appear to have substantial differences as shown either by differences in acceleration greater than .90 or by correlation coefficients less than .85 among the output series. As shown in appendix table A3, industries with current dollar data differences include SIC 10, 13, 20, 21, 27, 38, 41, 44, 45, 46, 47, 48, 49, 62, 63, 64, 78, 79, and 82. Of these industries, SIC 20, 38, 63, and 64 have differences in acceleration less than .90 but two or

[43] The more detailed 3- and 4- digit industries in each of these industry groups have not yet been compared (where possible).

more output measures with correlation coefficients of less than .85. Of the remaining industries, SIC 27, 48, and 49 have differences in acceleration ranging from .90 to 2.0; SIC 41 and 82 from 2.0 to 3.0; SIC 21, 45, 78, and 79 from 3.0 to 4.0 ; and SIC 47, 62, 10, 44, 46, and 13 from 4.0 to over 12.0. Each of these industries also exhibit correlation coefficients between two or more output measures of, in most instances, considerably less than .85. Current dollar output series for industries 29, 31, 35, 39, 40, 42, and 72 appear to be similar across available output measures.

IV.c.4.b. Price Indexes and Price Deflation Methods

Differences in price deflation methods are examined by comparing the difference between the constant and current dollar trend growth rates across output series. Where the difference between the constant and current dollar trend growth rates varies widely across output measures, differences in price indexes used or deflation methods are suspected. As shown in table A3, industries 10, 13, 21, 40, 42, 44, 46, 47, 48, 49, 62, 63, 64, 78, and 82 exhibit differences in the acceleration rates of the constant and current dollar output series of greater than .90, which is suggestive of differences due to price index choice or price deflation methods. Of these industries, SIC 40, 42, 44, 46, 48, 63, and 82 have differences in constant and current dollar acceleration rates ranging from .9 to 2.0; SIC 64 from 2.0-3.0; SIC 13, 21, 49, and 62 from 3.0-4.0; and SIC 47, 10, and 78 from 4.0-7.0. Output series for industries 20, 27, 29, 31, 35, 38, 39, 41, 45, 72, and 79 appear to use similar price indexes or deflation methods.

IV.c.4.c. Data Adjustments

The impact of BEA adjustments to underlying source data are examined by comparing trend growth rates for 1990-95 and 1995-00 and the acceleration in growth rates between these time periods using both the published BEA output measures and the unadjusted BEA output measures for those SIC 2-digit industries where both are available (SIC 2-digit manufacturing

industries and SIC 46 and 64).[44] As shown in table 11, industries where BEA adjustments appear to have an important effect on the trend growth rates for 1990-95 and 1995-00 include SIC 21, Tobacco Products, SIC 31, Leather and Leather Products, SIC 35, Industrial and Commercial Machinery and Computer Equipment, SIC 39, Miscellaneous Manufacturing Industries, and SIC 46, Pipelines, except Natural Gas. For SIC 21, the BEA adjustment results in a small but increased difference in acceleration between the $\mathbf{Y}^{G\text{-}2}{}_{BEA\text{-}P}$ measure and the $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}I\text{-}U}$. For SIC 31, 35, 39, and 46, the BEA adjustments appear to widen the difference in acceleration rate between the $\mathbf{Y}^{G\text{-}2}{}_{BEA\text{-}P}$ measure and the $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}I\text{-}U}$ and $\mathbf{Y}^{G\text{-}2}{}_{BLS\text{-}M\text{-}U}$ measures.

IV.c.4.d. Output Concept

To look at the impact of using a sectoral output measure rather than a gross output measure, the $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}M\text{-}P}$ output growth rate is correlated with the underlying gross (value of production) output growth rate series for the SIC 2-digit manufacturing industries. Only SIC 21 and 23 had correlation coefficients below .97, with R= .85 and .64 respectively. Difference in output concept appears to have a minimal role in explaining the differences among output series calculated for any given industry group.

IV.c.5 Case Studies

For some of the SIC 2-digit industries where differences in output measures are found, it is possible to trace the differences in 2-digit output measures to the more detailed 3- and 4-digit industries.[45] Industry groups 10, Metal Mining; 20, Food and Kindred Products; 21, Tobacco Products; 27, Printing, Publishing, and Allied Industries; 29, Petroleum Refining; 31, Leather and Leather Products; 35, Industrial and Commercial Machinery and Computer Equipment; 38,

[44] SIC 20-39, 46, and 64.
[45] Because SIC 3- and 4-digit output measures are not available from the BLS major sector program, the comparisons are limited to industries where the BEA and BLS industry productivity program output measures are both available.

Measuring, Analyzing and Controlling Instruments; Photographic, Medical and Optical Goods; Watches and Clocks; 39, Miscellaneous Manufacturing; 48, Communications; and 72, Personal Services; and 78, Motion Pictures; have sufficient 3- and 4-digit output data available for this purpose. Of these industries, we present case study results for SIC 10, 27, 29, 31, 35, 38, 48, and 72. Data for these industry groups is summarized in table A3. By comparing the underlying BEA and BLS SIC 3- or 4-digit industry data in each of these 2-digit industries, we can observe whether or not differences in output measurement at the 3- and 4-digit level are contributing to the higher-level differences.

SIC 10, Metal Mining, is an industry group where the underlying 4-digit industries overwhelmingly also exhibit differences in output series. At a 2-digit level, the $\mathbf{Y}^{G\text{-}2}_{BEA\text{-}P}$ and $\mathbf{Y}^{G\text{-}2}_{BLS\text{-}M\text{-}U}$ constant and current dollar output series exhibit differences. As seen in table A4, at a 4-digit level, $\mathbf{Y}^{G\text{-}4}_{BEA\text{-}U}$ and $\mathbf{Y}^{S\text{-}4}_{BLS\text{-}I\text{-}P,\,U}$ output series are available for 5 of the 9 4-digit industries, and for 4 of these industries the $\mathbf{Y}^{G\text{-}4}_{BEA\text{-}U}$ and $\mathbf{Y}^{S\text{-}4}_{BLS\text{-}I\text{-}P,\,U}$ real output series have differences in acceleration ranging from -1.28 to 7.54. The annual percent changes of the nominal $\mathbf{Y}^{G\text{-}4}_{BEA\text{-}U}$ and $\mathbf{Y}^{S\text{-}4}_{BLS\text{-}I\text{-}P,\,U}$ output are highly correlated for each of the 4-digit industries, although current dollar trend growth rates for 1011, 1041, and 1044 differ particularly for 1990-95.

The $\mathbf{Y}^{G\text{-}2}_{BEA\text{-}P}$ and $\mathbf{Y}^{S\text{-}2}_{BLS\text{-}I\text{-}U}$ real output series for SIC 27, Printing, Publishing and Allied Industries exhibit differences in acceleration of -1.51 and a correlation coefficient of .769. Of the eight underlying 3-digit industries, three have differences in acceleration among the $\mathbf{Y}^{G\text{-}3}_{BEA\text{-}U}$ and $\mathbf{Y}^{S\text{-}3}_{BLS\text{-}I\text{-}P}$ real output series ranging from -2.09 to -5.70, and a fourth has a correlation coefficient of .269 between the $\mathbf{Y}^{G\text{-}3}_{BEA\text{-}U}$ and $\mathbf{Y}^{S\text{-}3}_{BLS\text{-}I\text{-}P}$ real output series. Four of the fourteen SIC 4-digit industries in this group have low correlations between the annual percent

change rates for the real output measures $\mathbf{Y}^{G\text{-}4}{}_{BEA\text{-}U}$ and $\mathbf{Y}^{S\text{-}4}{}_{BLS\text{-}I\text{-}P.}$ Particularly noticeable is SIC 2771, Greeting Cards, with a correlation of .269.

SIC 29, Petroleum Refining and Related Industries is included as having differences in the output series at a 2-digit level primarily because of the low correlation coefficients between the $\mathbf{Y}^{G\text{-}2}{}_{BEA\text{-}P}$ and $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}I\text{-}P}$ output series (-.044) and the $\mathbf{Y}^{G\text{-}2}{}_{BEA\text{-}P}$ and $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}M\text{-}P}$ output series (-.013). Looking at the constant dollar output series for the three 3-digit industries in this group shows 291, Petroleum Refining, also has a very low negative correlation (-.130) between the $\mathbf{Y}^{G\text{-}3}{}_{BEA\text{-}U}$ and $\mathbf{Y}^{S\text{-}3}{}_{BLS\text{-}I\text{-}P}$ output series. BEA and BLS current dollar data series are highly correlated in each of these industries.[46]

For SIC 31, Leather and Leather Products, both the $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}I\text{-}U}$ and $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}M\text{-}P}$ output series appear to differ from the $\mathbf{Y}^{G\text{-}2}{}_{BEA\text{-}P}$ output series. Of the seven underlying 3-digit industries, four have differences in acceleration ranging from 1.24 to -8.77 between the $\mathbf{Y}^{G\text{-}3}{}_{BEA\text{-}U}$ and $\mathbf{Y}^{S\text{-}3}{}_{BLS\text{-}I\text{-}U,P}$ output series, and one of these four (SIC 313) has a correlation coefficient of .611 between these two output series. Current dollar data series for these output measures are highly correlated in six of the seven 3-digit industries, with a correlation coefficient of .625 for SIC 313.

In SIC 35, Industrial and Commercial Machinery and Computer Equipment, both the $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}I\text{-}U}$ and $\mathbf{Y}^{S\text{-}2}{}_{BLS\text{-}M\text{-}P}$ series have an acceleration rate about 1 percentage point greater than the $\mathbf{Y}^{G\text{-}2}{}_{BEA\text{-}P}$ output series. For the nine 3-digit industries in this group, the $\mathbf{Y}^{G\text{-}3}{}_{BEA\text{-}U}$ and $\mathbf{Y}^{S\text{-}3}{}_{BLS\text{-}I\text{-}P}$ real output series appear to be quite close with one exception. SIC 357, Computer and Office Equipment, which exhibits a rather large acceleration between the 1990-95 and 1995-00 time periods, has a difference in acceleration between the $\mathbf{Y}^{G\text{-}3}{}_{BEA\text{-}U}$ and

[46] It should be noted that the $\mathbf{Y}^{S\text{-}3}{}_{BLS\text{-}I\text{-}P}$ measure is a physical quantity measure, as compared to the $\mathbf{Y}^{G\text{-}3}{}_{BEA\text{-}U}$ measure, which is developed using Census value of shipments data.

$\mathbf{Y}^{S\text{-}3}_{\textit{BLS-I-P}}$ real output series of -2.87, although the series are highly correlated**.** This may in part reflect BEA adjustments to underlying data.

SIC 38, Measuring, Analyzing and Controlling Instruments; Photographic, Medical and Optical Goods; Watches and Clocks, exhibits differences in output series at the 2-digit level primarily because of the low correlation between the $\mathbf{Y}^{G\text{-}2}_{\textit{BEA-P}}$ and $\mathbf{Y}^{S\text{-}2}_{\textit{BLS-M-P}}$ series (.597), and the $\mathbf{Y}^{S\text{-}2}_{\textit{BLS-I-U}}$ and $\mathbf{Y}^{S\text{-}2}_{\textit{BLS-M-P}}$ series (.701). The trend growth rates of these series for 1990-95 and 1995-00 are fairly similar. The current dollar data series for each of these SIC 38 output measures also are very poorly correlated. Of the six 3-digit industries in this group, SIC 381, Search, Detection, Navigation, Guidance, Aeronautical and Nautical has a difference in acceleration for the $\mathbf{Y}^{G\text{-}3}_{\textit{BEA-U}}$ and $\mathbf{Y}^{S\text{-}3}_{\textit{BLS-I-P}}$ constant dollar output measures of -1.09, and SIC 387, Watches, Clocks, Clockwork Operated Devices, has a differences in acceleration for the $\mathbf{Y}^{G\text{-}3}_{\textit{BEA-U}}$ and $\mathbf{Y}^{S\text{-}3}_{\textit{BLS-I-U}}$ constant dollar output measures of 5.61. However, the real and nominal annual percent change in output series are highly correlated at the SIC 3-digit level.

For SIC 48, Communications, the 2-digit output series are found to differ based both on differences in acceleration between the $\mathbf{Y}^{G\text{-}2}_{\textit{BEA-P}}$ and $\mathbf{Y}^{G\text{-}2}_{\textit{BLS-M-U}}$ output series, and a correlation coefficient of .70. Selected data is available for this industry at a 3-digit level, including SIC 483, Radio and Television Broadcasting Stations and SIC 484, Cable and Other Pay Television Stations. $\mathbf{Y}^{G\text{-}3}_{\textit{BEA-U}}$ and $\mathbf{Y}^{S\text{-}3}_{\textit{BLS-I-P}}$ constant dollar output series for both of these industries differ as indicated both by differences in acceleration and low correlation between the output series. In SIC 483, the $\mathbf{Y}^{G\text{-}3}_{\textit{BEA-U}}$ and $\mathbf{Y}^{S\text{-}3}_{\textit{BLS-I-P}}$ measures have a difference in acceleration of -1.21, and a correlation coefficient of .73. In SIC 484, the $\mathbf{Y}^{G\text{-}3}_{\textit{BEA-U}}$ and $\mathbf{Y}^{S\text{-}3}_{\textit{BLS-I-P}}$ measures have a difference in acceleration of -1.70 and a correlation coefficient of .47. In SIC 483, the correlation coefficient for annual percent change in the current dollar output

series for the $\mathbf{Y}^{G\text{-}3}_{BEA\text{-}U}$ and $\mathbf{Y}^{S\text{-}3}_{BLS\text{-}I\text{-}P}$ measures is .392, and for SIC 484, it is .494, suggesting differences exist in the underlying data.

IV.c.6 SIC 4-Digit Industry Differences

In addition to comparisons of the $\mathbf{Y}^{G\text{-}2}_{BEA\text{-}P}$, $\mathbf{Y}^{S\text{-}2}_{BLS\text{-}I\text{-}U}$, and $\mathbf{Y}^{S\text{-}2}_{BLS\text{-}M\text{-}P}$ output measures for the SIC 2-digit manufacturing industries, we have compared BEA and BLS SIC 4-digit industry real output measures for all industries where both measures are available. The BEA measures for the 4-digit industries, $\mathbf{Y}^{G\text{-}4}_{BEA\text{-}U}$, are either the unadjusted gross output measures, based primarily on Census annual survey data[47] and benchmarked to the input-output accounts (nonmanufacturing), or the unadjusted shipments-based output measures (manufacturing). The BLS measures for the 4-digit industries, $\mathbf{Y}^{S\text{-}4}_{BLS\text{-}I\text{-}U,P}$, are BLS sectoral output measures, which are generally based on the quinquennial Census and survey data from the Bureau of the Census. Less commonly, in some industries these measures are based on physical quantity data. Where both output measures are available, differences in acceleration rates are computed for the 1990-1995 and 1995-2000 time periods. For 128 of the 458 SIC 4-digit industries compared, or roughly 28% of the industries, differences in acceleration rate of greater than 1.0 are found to exist between the $\mathbf{Y}^{G\text{-}4}_{BEA\text{-}U}$ and the $\mathbf{Y}^{S\text{-}4}_{BLS\text{-}I\text{-}U,P}$ output measures.

IV.c.7 Summary of Detailed Industry Differences

While BEA and BLS output measures for detailed manufacturing industries are quite similar, some differences in current dollar source data and in agency-specific adjustments may be worth addressing to improve consistency among these measures. BEA and BLS output measures for nonmanufacturing exhibit, for the majority of nonmanufacturing industries, large differences due primarily to differences in underlying data sources, price index choices, and deflation

[47] While these measures generally are based on the Census annual survey data, they may also involve data from a variety of other sources.

methods. However, these differences can be readily addressed. An effort to understand the sources of differences among the BEA and BLS nonmanufacturing output measures, at all levels, is highly recommended and has potentially large benefits for data users. Where appropriate, given the purposes of the measures, greater consistency among measures can be achieved. If reasons for the differences among output measures exist, then these reasons can be documented.

Table 4.--Real Output for Major Sectors
Average Annual Growth Rates
(percent)

Program/Measure	1990-1995 (1)	1995-2000 (2)	2000-2001 (3)	1995-00 less 90-95 (2) - (1)
BEA NIPA's				
GDP	2.38	4.03	0.25	1.65
GDI (excludes S.D.)	2.41	4.38	0.11	1.96
Nonfarm business 1	2.68	4.47	-0.06	1.79
Nonfarm business less housing	2.74	4.72	-0.09	1.98
BLS				
Nonfarm business 2	2.71	4.63	-0.07	1.92
Private nonfarm business 2	2.79	4.64	-0.08	1.86
BEA Industry Accounts				
All Industries	2.22	4.20	0.55	1.97
All Industries less S.D.	2.26	4.55	0.41	2.29
Nonfarm business 3	2.56	4.85	0.45	2.28
Nonfarm business less S.D. 3	2.61	5.27	0.27	2.67
Private nonfarm business 3	2.62	4.86	0.47	2.24
Private nonfarm business less S.D. 3	2.67	5.31	0.29	2.64

1 Includes all housing.
2 Includes tenant-occupied housing only.
3 Excludes all housing.

Table 5.--Nominal Output for Major Sectors
Average Annual Growth Rates
(percent)

Program/Measure	1990-1995 (1)	1995-2000 (2)	2000-2001 (3)	1995-00 less 90-95 (2) - (1)
BEA NIPA's				
GDP	4.98	5.83	2.62	0.85
GDI (excludes S.D.)	5.02	6.18	2.47	1.16
Nonfarm business 1	5.13	6.12	2.05	0.99
Nonfarm less housing	5.14	6.22	1.82	1.08
BLS				
Nonfarm business 2	5.13	6.13	1.86	1.00
Private nonfarm business 2	5.13	6.17	1.81	1.04
BEA Industry Accounts				
All Industries	4.98	5.83	2.62	0.85
All Industries less S.D.	5.02	6.18	2.47	1.16
Nonfarm business 3	5.22	6.19	2.11	0.97
Nonfarm business less S.D. 3	5.26	6.63	1.93	1.37
Private nonfarm business 3	5.21	6.22	2.07	1.01
Private nonfarm business less S.D. 3	5.26	6.67	1.89	1.42

1 Includes all housing.
2 Includes tenant-occupied housing only. Nominal measure derived from BEA data.
3 Excludes all housing.

Table 6.--Real Output for Manufacturing
Average Annual Growth Rates
(percent)

Program/Measure	1990-1995	1995-2000	2000-2001	1995-00 less 90-95
	(1)	(2)	(3)	(2) - (1)
BLS				
Sectoral output, all mfg.	3.11	4.11	-4.83	1.00
Durable goods	3.89	6.37	-6.29	2.48
Nondurable goods	2.28	1.51	-3.13	-0.78
BEA				
Gross output, all mfg.	3.09	4.24	-6.71	1.15
Durable goods	4.47	6.72	-8.93	2.25
Nondurable goods	1.57	1.31	-4.07	-0.26
Value added, all mfg.	3.11	4.30	-6.00	1.18
Durable goods	4.09	7.87	-5.19	3.79
Nondurable goods	1.86	-0.44	-7.12	-2.29
FRB IPI				
Manufacturing (SIC)	3.25	5.92	-4.07	2.67
Manufacturing (NAICS)	3.49	6.04	-4.14	2.55
Durable goods (NAICS)	4.88	9.55	-4.98	4.67
Nondurable goods (NAICS)	1.76	1.36	-3.01	-0.40

Table 7.--Nominal Output for Manufacturing
Average Annual Growth Rates
(percent)

Program/Measure	1990-1995	1995-2000	2000-20011	1995-00 less 90-95
	(1)	(2)	(3)	(2) - (1)
BLS				
Sectoral output, all mfg.	4.10	3.99	NA	-0.11
Durable goods	4.79	4.23	NA	-0.56
Nondurable goods	3.52	3.60	NA	0.08
BEA				
Gross output, all mfg.	4.30	3.75	-7.62	-0.55
Durable goods	5.31	4.19	-11.21	-1.12
Nondurable goods	3.21	3.23	-3.28	0.02
Value added, all mfg.	4.38	3.35	-6.40	-1.02
Durable goods	4.47	3.96	-8.30	-0.50
Nondurable goods	4.26	2.54	-3.74	-1.72

Note: Nominal estimates are not available for the FRB IPI.
1 BLS estimates for 2001 are not available.

Table 8. Comparison of Real Output Measures: Selected SIC 2-Digit Industries

SIC 2-Digit Industry	Output Series	Average Annual Growth Rate (1990-95) (1)	Average Annual Growth Rate (1995-00) (2)	Acceleration (2) - (1)	Output Measure Comparisons	Difference in Acceleration	Correlation Coefficient
SIC 20, Food and Kindred Products	Y^{G-2}_{BEA-P}	1.95	1.23	-0.72	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	-0.03	0.979
	$Y^{S-2}_{BLS-I-U}$	1.96	1.27	-0.69	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-M-P}$	**0.94**	**0.640**
	$Y^{S-2}_{BLS-M-P}$	2.67	1.02	-1.66	$Y^{S-2}_{BLS-I-U} / Y^{S-2}_{BLS-M-P}$	**0.96**	**0.687**
SIC 21, Tobacco Products	Y^{G-2}_{BEA-P}	0.33	-2.62	-2.95	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	0.66	0.996
	$Y^{S-2}_{BLS-I-U}$	0.82	-2.78	-3.61	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-M-U*}$	**0.95**	0.977
	$Y^{S-2}_{BLS-M-U*}$	0.70	-3.20	-3.89	$Y^{S-2}_{BLS-I-U} / Y^{S-2}_{BLS-M-U*}$	-0.26	0.991
SIC 27, Printing, Publishing, and Allied Industries	Y^{G-2}_{BEA-P}	-0.47	1.22	1.69	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	**-1.51**	**0.769**
	$Y^{S-2}_{BLS-I-U}$	-0.42	2.77	3.20	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-M-P}$	0.41	0.904
	$Y^{S-2}_{BLS-M-P}$	-0.10	1.18	1.28	$Y^{S-2}_{BLS-I-U} / Y^{S-2}_{BLS-M-P}$	**1.92**	**0.727**
SIC 29, Petroleum Refining and Related Industries	Y^{G-2}_{BEA-P}	0.81	1.08	0.27	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	-0.11	**-0.044**
	$Y^{S-2}_{BLS-I-U}$	1.20	1.58	0.39	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-M-P}$	-0.35	**-0.127**
	$Y^{S-2}_{BLS-M-P}$	0.88	1.51	0.63	$Y^{S-2}_{BLS-I-U} / Y^{S-2}_{BLS-M-P}$	-0.24	0.988
SIC 31, Leather and Leather Products	Y^{G-2}_{BEA-P}	-1.97	-1.59	0.38	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	**-1.14**	0.949
	$Y^{S-2}_{BLS-I-U}$	-2.67	-1.15	1.52	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-M-U*}$	**-1.23**	0.923
	$Y^{S-2}_{BLS-M-U*}$	-3.14	-1.53	1.60	$Y^{S-2}_{BLS-I-U} / Y^{S-2}_{BLS-M-U*}$	-0.08	0.969
SIC 35, Industrial and Commercial Machinery and Computer Equipment	Y^{G-2}_{BEA-P}	8.44	9.38	0.94	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	**-1.09**	0.991
	$Y^{S-2}_{BLS-I-U}$	8.02	10.05	2.03	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-M-P}$	**-1.15**	0.976
	$Y^{S-2}_{BLS-M-P}$	7.94	10.03	2.09	$Y^{S-2}_{BLS-I-U} / Y^{S-2}_{BLS-M-P}$	-0.06	0.985
SIC 38, Measuring, Analyzing, And Controlling Instruments; Photographic, Medical And Optical Goods; Watches And Clocks	Y^{G-2}_{BEA-P}	1.05	3.20	2.15	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	-0.39	0.916
	$Y^{S-2}_{BLS-I-U}$	0.87	3.41	2.54	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-M-P}$	-0.62	**0.597**
	$Y^{S-2}_{BLS-M-P}$	1.27	4.04	2.77	$Y^{S-2}_{BLS-I-U} / Y^{S-2}_{BLS-M-P}$	-0.23	**0.701**
SIC 39, Miscellaneous Manufacturing Industries	Y^{G-2}_{BEA-P}	1.44	3.22	1.78	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	**0.96**	0.954
	$Y^{S-2}_{BLS-I-U}$	2.00	2.82	0.81	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-M-P}$	**0.94**	**0.867**
	$Y^{S-2}_{BLS-M-P}$	2.02	2.85	0.83	$Y^{S-2}_{BLS-I-U} / Y^{S-2}_{BLS-M-P}$	-0.02	**0.842**

*** For SIC 21, Tobacco Products, and SIC 31, Leather and Leather Products, BLS output measures are unpublished because the output data for these industries is considered unreliable.**

Table 9.— Receipts of Industries Covered by BLS Compared with BEA Gross Output for Nonmanufacturing Industry Groups, 1996 (dollars in billions)

Industry Group	Receipts of BLS Industries in Ind. Group 1 (1)	Published BEA Industry Gross Output (2)	Receipts as Percent of BEA Gross Output (1)/(2)
Nonmanufacturing, total	3622.1	7826.9	46.3
Agriculture exc. Farms	0.0	55.8	0.0
Mining	178.1	186.6	95.4
Metal mining	8.7	12.6	68.7
Coal mining	25.3	27.1	93.3
Oil and gas extraction	127.6	129.8	98.2
Nonmetallic minerals	16.5	17.0	97.1
Construction	0.0	554.5	0.0
Transportation	351.5	477.9	73.6
Railroad transportation	39.2	40.7	96.3
Local passenger transit	0.0	24.2	0.0
Trucking & warehousing	189.6	213.8	88.7
Water transportation	0.0	36.4	0.0
Transportation by air	115.3	117.3	98.3
Pipelines, exc. nat. gas	7.4	7.8	94.5
Transportation services	0.0	37.7	0.0
Communications	318.0	348.7	91.2
Telephone & telegraph	240.5	270.0	89.1
Radio & television	77.5	78.8	98.4
Elec., gas, & sanitary srvs.	308.0	336.2	91.6
Wholesale trade	672.9	789.8	85.2
Retail trade	951.8	1070.9	88.9
FIRE less nonfarm housing	339.4	1499.3	22.6
Depository institutions	339.4	342.7	99.1
Nondepos. Institutions	0.0	108.4	0.0

Security & comm. brokers	0.0	169.3	0.0
Insurance carriers	0.0	261.5	0.0
Insur. agents & brokers	0.0	74.0	0.0
Real estate exc. housing	0.0	520.4	0.0
Holding & invest. Offices	0.0	23.1	0.0
Services less households	502.4	2507.3	20.0
Hotels and lodging	95.6	106.5	89.8
Personal services	83.3	84.6	98.5
Business services	214.8	510.6	42.1
Auto repair & services	101.6	124.3	81.7
Misc. repair services	0.0	46.4	0.0
Motion pictures	7.1	56.8	12.6
Amusement & rec. servs.	0.0	110.7	0.0
Health services	0.0	688.0	0.0
Legal services	0.0	134.1	0.0
Educational services	0.0	103.8	0.0
Social services	0.0	98.7	0.0
Membership orgs.	0.0	96.2	0.0
Other services	0.0	346.6	0.0

1 Sum of BEA detailed receipts estimates for those industries covered by BLS.

Table 10. Comparison of Real Output Measures: SIC 2-Digit Nonmanufacturing Industries

SIC 2-Digit Industry	Output Measures	Average Annual Growth Rate (1990-95) (1)	Average Annual Growth Rate (1995-00) (2)	Acceleration (2) - (1)	Output Measure Comparisons	Difference in Acceleration	Correlation Coefficient
SIC 10, Metal Mining	Y^{G-2}_{BEA-P}	2.08	-0.48	-2.57	Y^{G-2}_{BEA-P} / $Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	Y^{G-2}_{BEA-P} / $Y^{G-2}_{BLS-M-U}$	**-1.52**	**0.93**
	$Y^{G-2}_{BLS-M-U}$	1.69	0.65	-1.04	$Y^{S-2}_{BLS-I-U}$ / $Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 12, Coal Mining	Y^{G-2}_{BEA-P}	0.50	0.58	0.08	Y^{G-2}_{BEA-P} / $Y^{S-2}_{BLS-I-U}$	**-0.37**	**0.98**
	$Y^{S-2}_{BLS-I-U}$	-0.91	-0.45	0.46	Y^{G-2}_{BEA-P} / $Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U}$ / $Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 13, Oil and Gas Extraction	Y^{G-2}_{BEA-P}	-0.40	0.74	1.14	Y^{G-2}_{BEA-P} / $Y^{S-2}_{BLS-I-U}$	**1.15**	**0.68**
	$Y^{S-2}_{BLS-I-U}$	-0.75	-0.75	-0.01	Y^{G-2}_{BEA-P} / $Y^{G-2}_{BLS-M-U}$	**-1.09**	**0.92**
	$Y^{G-2}_{BLS-M-U}$	-1.12	1.12	2.24	$Y^{S-2}_{BLS-I-U}$ / $Y^{G-2}_{BLS-M-U}$	**-2.24**	**0.70**
SIC 14, Mining And Quarrying Of Nonmetallic Minerals, Except Fuels	Y^{G-2}_{BEA-P}	1.14	2.10	0.96	Y^{G-2}_{BEA-P} / $Y^{S-2}_{BLS-I-U}$	**-0.05**	**0.97**
	$Y^{S-2}_{BLS-I-U}$	0.14	1.15	1.01	Y^{G-2}_{BEA-P} / $Y^{G-2}_{BLS-M-U}$	**-0.10**	**0.83**
	$Y^{G-2}_{BLS-M-U}$	1.61	2.67	1.06	$Y^{S-2}_{BLS-I-U}$ / $Y^{G-2}_{BLS-M-U}$	**-0.05**	**0.82**
SIC 40, Railroad Transportation	Y^{G-2}_{BEA-P}	3.39	0.67	-2.72	Y^{G-2}_{BEA-P} / $Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	Y^{G-2}_{BEA-P} / $Y^{G-2}_{BLS-M-U}$	**-0.47**	**0.64**
	$Y^{G-2}_{BLS-M-U}$	1.63	-0.62	-2.25	$Y^{S-2}_{BLS-I-U}$ / $Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 41, Local And Suburban Transit And Interurban Highway Passenger Transportation	Y^{G-2}_{BEA-P}	0.54	2.36	1.82	Y^{G-2}_{BEA-P} / $Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	Y^{G-2}_{BEA-P} / $Y^{G-2}_{BLS-M-U}$	**2.18**	**0.75**
	$Y^{G-2}_{BLS-M-U}$	1.59	1.22	-0.36	$Y^{S-2}_{BLS-I-U}$ / $Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 42, Motor Freight Transportation And Warehousing	Y^{G-2}_{BEA-P}	4.89	4.06	-0.82	Y^{G-2}_{BEA-P} / $Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	Y^{G-2}_{BEA-P} / $Y^{G-2}_{BLS-M-U}$	**-0.97**	**0.54**
	$Y^{G-2}_{BLS-M-U}$	4.48	4.63	0.15	$Y^{S-2}_{BLS-I-U}$ / $Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 43, United States Postal Service	Y^{G-2}_{BEA-P}	NA	NA	NA	Y^{G-2}_{BEA-P} / $Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	1.45	2.37	0.93	Y^{G-2}_{BEA-P} / $Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U}$ / $Y^{G-2}_{BLS-M-U}$	NA	NA

Table 10. Comparison of Real Output Measures: SIC 2-Digit Nonmanufacturing Industries

SIC 2-Digit Industry	Output Measures	Average Annual Growth Rate (1990-95) (1)	Average Annual Growth Rate (1995-00) (2)	Acceleration (2) - (1)	Output Measure Comparisons	Difference in Acceleration	Correlation Coefficient
SIC 44, Water Transportation	Y^{G-2}_{BEA-P}	2.39	4.72	2.33	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**5.25**	**0.54**
	$Y^{G-2}_{BLS-M-U}$	2.40	-0.52	-2.92	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 45, Transportation By Air	Y^{G-2}_{BEA-P}	3.14	5.39	2.25	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**4.61**	**0.40**
	$Y^{G-2}_{BLS-M-U}$	3.84	1.48	-2.36	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 46, Pipelines, Except Natural Gas	Y^{G-2}_{BEA-P}	-5.39	0.14	5.52	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**7.17**	**0.62**
	$Y^{G-2}_{BLS-M-U}$	-1.39	-3.04	-1.65	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 47, Transportation Services	Y^{G-2}_{BEA-P}	4.78	6.21	1.43	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**0.16**	**0.56**
	$Y^{G-2}_{BLS-M-U}$	4.48	5.75	1.26	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 48, Communications	Y^{G-2}_{BEA-P}	5.55	11.38	5.83	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**3.53**	**0.70**
	$Y^{G-2}_{BLS-M-U}$	4.38	6.67	2.30	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 49, Electric, Gas, And Sanitary Services	Y^{G-2}_{BEA-P}	1.96	1.48	-0.48	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**-1.97**	**0.11**
	$Y^{G-2}_{BLS-M-U}$	0.14	1.63	1.49	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 50, Wholesale Trade-durable Goods	Y^{G-2}_{BEA-P}	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	5.56	8.57	3.01	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 51, Wholesale Trade-non-durable Goods	Y^{G-2}_{BEA-P}	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	1.05	2.29	1.24	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA

Table 10. Comparison of Real Output Measures: SIC 2-Digit Nonmanufacturing Industries

SIC 2-Digit Industry	Output Measures	Average Annual Growth Rate (1990-95) (1)	Average Annual Growth Rate (1995-00) (2)	Acceleration (2) - (1)	Output Measure Comparisons	Difference in Acceleration	Correlation Coefficient
SIC 52, Building Materials, Hardware, Garden Supply, And Mobile Home Dealers	Y^{G-2}_{BEA-P}	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	4.97	6.93	1.95	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 53, General Merchandise Stores	Y^{G-2}_{BEA-P}	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	6.19	7.06	0.87	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 54, Food Stores	Y^{G-2}_{BEA-P}	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	-0.23	1.20	1.44	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 55, Automotive Dealers And Gasoline Service Stations	Y^{G-2}_{BEA-P}	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	2.00	3.63	1.63	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 56, Apparel And Accessory Stores	Y^{G-2}_{BEA-P}	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	3.52	6.34	2.83	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 57, Home Furniture, Furnishings, And Equipment Stores	Y^{G-2}_{BEA-P}	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	7.73	10.98	3.26	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 58, Eating And Drinking Places	Y^{G-2}_{BEA-P}	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	1.53	3.31	1.78	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 59, Miscellaneous Retail	Y^{G-2}_{BEA-P}	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	3.61	7.93	4.31	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA

Table 10. Comparison of Real Output Measures: SIC 2-Digit Nonmanufacturing Industries

SIC 2-Digit Industry	Output Measures	Average Annual Growth Rate (1990-95) (1)	Average Annual Growth Rate (1995-00) (2)	Acceleration (2) - (1)	Output Measure Comparisons	Difference in Acceleration	Correlation Coefficient
SIC 60, Depository Institutions	Y^{G-2}_{BEA-P}	1.31	2.93	1.63	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 61, Non-depository Credit Institutions	Y^{G-2}_{BEA-P}	9.49	12.27	2.78	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 62, Security And Commodity Brokers, Dealers, Exchanges, And Services	Y^{G-2}_{BEA-P}	16.11	23.35	7.24	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**-1.24**	**0.80**
	$Y^{G-2}_{BLS-M-U}$	13.54	22.02	8.48	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 63, Insurance Carriers	Y^{G-2}_{BEA-P}	-0.15	-1.53	-1.38	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**-1.15**	**0.72**
	$Y^{G-2}_{BLS-M-U}$	0.87	0.64	-0.23	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 64, Insurance Agents, Brokers, And Service	Y^{G-2}_{BEA-P}	-2.67	4.07	6.74	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**2.30**	**-0.11**
	$Y^{G-2}_{BLS-M-U}$	-0.41	4.03	4.44	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 65, Real Estate	Y^{G-2}_{BEA-P}	2.28	3.18	0.90	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 67, Holding And Other Investment Offices	Y^{G-2}_{BEA-P}	1.35	7.85	6.50	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 70, Hotels, Rooming Houses, Camps, And Other Lodging Places	Y^{G-2}_{BEA-P}	2.62	3.19	0.57	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**0.08**	**0.93**
	$Y^{G-2}_{BLS-M-U}$	2.27	2.76	0.49	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA

Table 10. Comparison of Real Output Measures: SIC 2-Digit Nonmanufacturing Industries

SIC 2-Digit Industry	Output Measures	Average Annual Growth Rate (1990-95) (1)	Average Annual Growth Rate (1995-00) (2)	Acceleration (2) - (1)	Output Measure Comparisons	Difference in Acceleration	Correlation Coefficient
SIC 72, Personal Services	Y^{G-2}_{BEA-P}	2.45	2.71	0.26	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	**-1.20**	**0.95**
	$Y^{S-2}_{BLS-I-U}$	1.44	2.89	1.45	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**-1.97**	**0.90**
	$Y^{G-2}_{BLS-M-U}$	1.33	3.56	2.23	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	**-0.78**	**0.97**
SIC 73, Business Services	Y^{G-2}_{BEA-P}	6.76	11.10	4.34	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 75, Automotive Repair, Services, And Parking	Y^{G-2}_{BEA-P}	2.98	4.09	1.12	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**0.33**	**0.84**
	$Y^{G-2}_{BLS-M-U}$	4.40	5.18	0.79	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 76, Miscellaneous Repair Services	Y^{G-2}_{BEA-P}	2.11	0.96	-1.15	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 78, Motion Pictures	Y^{G-2}_{BEA-P}	3.89	2.95	-0.94	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**-2.78**	**0.46**
	$Y^{G-2}_{BLS-M-U}$	4.74	6.58	1.83	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 79, Amusement And Recreation Services	Y^{G-2}_{BEA-P}	6.74	3.87	-2.86	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**-3.80**	**0.34**
	$Y^{G-2}_{BLS-M-U}$	5.85	6.79	0.94	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 80, Health Services	Y^{G-2}_{BEA-P}	2.32	2.57	0.25	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**-0.27**	**0.91**
	$Y^{G-2}_{BLS-M-U}$	2.66	3.18	0.52	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 81, Legal Services	Y^{G-2}_{BEA-P}	-0.66	2.86	3.52	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA

Table 10. Comparison of Real Output Measures: SIC 2-Digit Nonmanufacturing Industries

SIC 2-Digit Industry	Output Measures	Average Annual Growth Rate (1990-95) (1)	Average Annual Growth Rate (1995-00) (2)	Acceleration (2) - (1)	Output Measure Comparisons	Difference in Acceleration	Correlation Coefficient
SIC 82, Educational Services	Y^{G-2}_{BEA-P}	2.86	2.75	-0.11	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	**-3.44**	**0.58**
	$Y^{G-2}_{BLS-M-U}$	0.35	3.68	3.33	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 83, Social Services	Y^{G-2}_{BEA-P}	4.15	5.01	0.87	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 86, Membership Organizations	Y^{G-2}_{BEA-P}	3.21	1.05	-2.15	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA
SIC 88, Private Households	Y^{G-2}_{BEA-P}	1.43	-0.42	-1.84	$Y^{G-2}_{BEA-P} / Y^{S-2}_{BLS-I-U}$	NA	NA
	$Y^{S-2}_{BLS-I-U}$	NA	NA	NA	$Y^{G-2}_{BEA-P} / Y^{G-2}_{BLS-M-U}$	NA	NA
	$Y^{G-2}_{BLS-M-U}$	NA	NA	NA	$Y^{S-2}_{BLS-I-U} / Y^{G-2}_{BLS-M-U}$	NA	NA

NOTE: Output data are not available for SIC 01, 02, 07, 08, 09, 15, 16, 17, 84, 87, 91, 92, 93, 94, 95, 96, 97, and 99.

SIC 01, Agricultural Production Crops
SIC 02, Agricultural Production Livestock and Animal Specialties
SIC 07, Agricultural Services
SIC 08, Forestry
SIC 09, Fishing, Hunting and Trapping
SIC 15, Building Construction General Contractors and Operative Builders
SIC 16, Heavy Construction Other Than Building Construction
SIC 17, Construction Special Trade Contractors
SIC 84, Museums, Art Galleries, and Botanical and Zoological Gardens
SIC 87, Engineering, Accounting, Research, Management, and Related Services
SIC 91, Executive, Legislative, and General Government, except Finance
SIC 92, Justice, Public Order, and Safety
SIC 93, Public Finance, Taxation, and Monetary Policy
SIC 94, Administration of Human Resource Programs
SIC 95, Administration of Environmental Quality and Housing
SIC 96, Administration of Economic Programs
SIC 97, National Security and International Affairs
SIC 99, Nonclassifiable Establishments

Table 11. Comparisons of BEA Adjusted (Y^{G-2}_{BEA-P}) and Unadjusted (Y^{G-2}_{BEA-U}) Output Measures

Constant Dollar Annual Percent Change in Output Series

SIC 2-Digit Industry	Y^{G-2}_{BEA-P} (adjusted) Acceleration Rate (90-95, 95-00)	Y^{G-2}_{BEA-U} (unadjusted) Acceleration Rate (90-95, 95-00)	Y^{G-2}_{BEA-P} (adjusted) vs $Y^{S-2}_{BLS-I-U}$		Y^{G-2}_{BEA-U} (unadjusted) vs $Y^{S-2}_{BLS-I-U}$		Y^{G-2}_{BEA-P} (adjusted) vs $Y^{S-2}_{BLS-M-P}$ (or, for SIC 46, $Y^{G-2}_{BLS-M-U}$)		Y^{G-2}_{BEA-U} (unadjusted) vs $Y^{S-2}_{BLS-M-P}$ (or, for SIC 46, $Y^{G-2}_{BLS-M-U}$)	
			Difference in Acceleration Rates	Correlation Coefficient	Difference in Acceleration Rates	Correlation Coefficient	Difference in Acceleration Rates	Correlation Coefficient	Difference in Acceleration Rates	Correlation Coefficient
SIC 21 Tobacco Products	-2.95	-3.84	0.66	0.996	-0.23	1.000	0.95	0.977	0.06	0.988
SIC 31 Leather and Leather Products	0.38	1.1	-1.14	0.949	-0.42	0.995	-1.23	0.923	-0.50	0.959
SIC 35 Industrial and Commercial Machinery and Computer Equipment	0.94	1.91	-1.09	0.991	-0.12	0.993	-1.15	0.976	-0.18	0.985
SIC 39 Miscellaneous Manufacturing Industries	1.78	0.96	0.96	0.954	0.15	0.957	0.94	0.867	0.13	0.831
SIC 46 Pipelines, Except Natural Gas	5.52	2.93	NA	NA	NA	NA	7.17	0.617	4.58	0.151

NOTE: Data required for comparisons is unavailable in SIC 02, 07, 08, 09, 10, 12, 13, 14, 15, 16, 17, 37, 40, 41, 42, 43, 44, 45, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 65, 70, 72, 73, 75, 76, 78, 79, 80, 82, 83, 84, 86, 87, 88, 91, 92, 93, 94, 95, 96, 97, and 99.

V. Summary

This paper takes some initial steps toward the goal of constructing complete integrated production accounts for the U.S. economy. These steps include the provision of a description of an ideal framework, the construction of an illustrative integrated aggregate level account, and an extensive examination of the various industry output measures that have been published by the BEA and the BLS.

This paper spells out a more ambitious framework for a "production account" than that presented in earlier national accounting literature. The framework is intended to describe, from the ground up, the process of assembling data to account for growth along the lines of JGF (1987). The framework starts with data on industry production of commodities and on inter-industry flows (both in nominal terms), similar to those available in an input-output system, and with data on commodity prices. The production account describes deflation and Divisia or superlative aggregation. This leads to measures of real input, real output, and productivity.

The paper also presents an integrated aggregate production account for the U.S. private business and private nonfarm business sectors. It shows how line items from BEA's National Accounts are used in moving from total economy nominal GDP to business sector nominal output and how that, in turn, consists of components such as labor compensation, property income, indirect taxes, subsidies and statistical discrepancy. For the business sectors, the paper also presents real output, published by BEA, and real inputs and multifactor productivity as published by BLS.

Finally, it describes the most comprehensive effort to date to document, present, and compare the various measures of industry output available from BEA and BLS. The paper describes which measures are available, provides information on how they are put together by

the agencies, and where possible compares the measures empirically. Several comparisons are made to assess whether the differences that exist are due to differences in nominal output (differences in data sources), differences in concept, differences in adjustments to data, or differences in deflation. In the future, the results of these comparisons may be used by the two agencies to construct cross-walks between series and, wherever warranted, to reduce the differences. The comparisons are in the form of spreadsheets and these materials will be made available to the research community.

This paper represents an important collaborative first step. Future efforts will focus on further explaining and documenting differences in BEA and BLS measures with a goal of improving the accuracy of these accounts, capturing the best features of both data sets, harmonizing and integrating the measures when appropriate, increasing understanding of remaining differences to facilitate economic research, in particular that focusing on economic growth and productivity.

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TABLE APPENDIX

Table A1. Comparison of Output Measures: Concept and Measurement Methods

Attribute	BEA Published Gross Output Y^{G}_{BEA-P}	BEA Unpublished Unadjusted Gross Output for Nonmanufacturing Detailed Industries $Y^{G-2,3,4}_{BEA-U}$	BEA Unpublished Sum of Shipments Output Series for Detailed Manufacturing Industries $Y^{SS-2,3,4}_{BEA-U}$	BEA Published Value Added Output Series Y^{VA}_{BEA-P}	BLS Published Sectoral Output Series for Manufacturing Industries $Y^{S-1,2}_{BLS-P}$	BLS Unpublished Sectoral Output Series for SIC 2-digit Manufacturing Industries Y^{S-2}_{BLS-U}	BLS Published Sectoral Output Series for Detailed Industries $Y^{S-3,4}_{BLS-P}$
Output Concept	Gross Output Gross Output is the market value of an industry's production, including commodity taxes. Gross Output is measured as value of shipments plus inventory changes less cost of resales plus misreporting and coverage adjustments, plus adjustments for own-account production of software, own-account construction work, and commodity (sales) taxes. Adjustments for inventory change and cost of resales are made only for goods-producing industries.	Gross Output For nonmanufacturing industries, unadjusted gross output is usually measured as receipts or sales. For wholesale trade and retail trade, gross output is measured as sales minus the cost of goods sold (margin).	Sum of Shipments Sum of shipments is a narrower concept than Gross Output, computed as an intermediate step in the calculation of BEA's published gross output measure.	Value Added Output Value Added Output is the difference between gross output and the cost of raw materials and other inputs (intermediate inputs) which are used up in production.	Sectoral Output Sectoral Output is the value of shipments plus inventory changes, less intra-industry shipments. This sectoral output series is measured by BLS as the deflated value of shipments plus inventory change, plus federal excise taxes. Federal excise taxes are added so that production will be shown at market value.	Sectoral Output Sectoral Output is the value of shipments plus inventory changes, less resales and intra-industry shipments. The constant dollar output series is constructed for comparison purposes only, by Tornqvist aggregation of BLS SIC 3-digit sectoral real output measures. Note that this measure does not include adjustments to remove intrasectoral transactions at the SIC 2-digit level.	Sectoral Output Sectoral Output is the value of shipments plus inventory changes, less resales and intra-industry shipments.
Industry Coverage	All Industries, Private Industries, Goods-Producing Industries, Services-Producing Industries, SIC Divisions, and Selected 2-digit Major Groups of Industries. Data are available for all 2-digit manufacturing industries with the exception of 37. Instead of 37, data are available at the more detailed level for 371 and 372-9. Data are available for numerous 2-digit nonmanufacturing industries, including SIC 10,12,13, 14, 40, 41, 42, 44, 45, 46, 47, 48, 49, 60, 61, 62, 63, 64, 65, 67, 70, 72, 73, 75, 76, 78, 79, 80, 81, 82, 83, 86, and 88.	Data are available for selected SIC 2-, 3- and 4-digit nonmanufacturing industries.	SIC 2-digit major groups, 3-digit industry groups, and 4-digit industries.	All Industries, Private Industries, Goods-Producing Industries, Services-Producing Industries, SIC Divisions, and Selected 2-digit Major Groups of Industries. Data are available for all 2-digit manufacturing industries with the exception of 37. Instead of 37, data are available at the more detailed level for 371 and 372-9. Data are available for numerous 2-digit nonmanufacturing industries, including SIC 10,12,13, 14, 40, 41, 42, 44, 45, 46, 47, 48, 49, 60, 61, 62, 63, 64, 65, 67, 70, 72, 73, 75, 76, 78, 79, 80, 81, 82, 83, 86, and 88	SIC 1-digit Manufacturing Division and 20 SIC 2-digit Manufacturing Industries.	20 SIC 2-digit Manufacturing Industries	SIC 3 and 4 digit industries, including over 190 3-digit industries and over 335 4-digit industries. All SIC 3- and 4-digit manufacturing and wholesale and retail trade industries are covered.
Industry Classification	Data for 1977-86 are on a 1972 SIC basis. Data for 1988-2001 are on a 1987 SIC basis. For 1987, both the 1972 and 1987 SIC basis is available.	Data for 1977-86 are on a 1972 SIC basis. Data for 1988-2001 are on a 1987 SIC basis. For 1987, both the 1972 and 1987 SIC basis is available.	Data for 1977-86 are on a 1972 SIC basis. Data for 1988-2001 are on a 1987 SIC basis. For 1987, both the 1972 and 1987 SIC basis is available.	Data for 1947-86 are on a 1972 SIC basis. Data for 1988-2001 are on a 1987 SIC basis. For 1987, both the 1972 and 1987 SIC basis is available.	Data for 1947-2000 are available on a 1987 SIC basis.	Data for 1987-2000 are available on a 1987 SIC basis.	Data for 1987-2000 are available on a 1987 SIC basis.

Attribute	BEA Published Gross Output Y^{G}_{BEA-P}	BEA Unpublished Unadjusted Gross Output for Nonmanufacturing Detailed Industries $Y^{G-2,3,4}_{BEA-U}$	BEA Unpublished Sum of Shipments Output Series for Detailed Manufacturing Industries $Y^{SS-2,3,4}_{BEA-U}$	BEA Published Value Added Output Series Y^{VA}_{BEA-P}	BLS Published Sectoral Output Series for Manufacturing Industries $Y^{S-1,2}_{BLS-P}$	BLS Unpublished Sectoral Output Series for SIC 2-digit Manufacturing Industries Y^{S-2}_{BLS-U}	BLS Published Sectoral Output Series for Detailed Industries $Y^{S-3,4}_{BLS-P}$
Source Data	The Gross Output data series are developed by additional adjustments to the unadjusted or "raw" data series (YG-2BEA-U and YSS-2BEA-U) created for the detailed industries. Additional adjustments are made for cost of resales, misreporting and coverage adjustments, own-account production of software, own-account construction work, and commodity (sales) taxes.	Current dollar estimates are obtained from BEA's benchmark input-output accounts for 1977, 1982, 1987, and 1992. For non-benchmark years, current dollar estimates are developed by interpolating annual series between benchmark levels and by extrapolating from the most recent benchmark. Annual interpolator and extrapolator series are developed from various sources, including BEA's National Income and Product Accounts, Census Bureau Annual Surveys, other government surveys, and trade sources.	Census Bureau Annual Survey of Manufactures: Statistics for Industry Groups and Industries. (Value of Estimated Shipments Data)	Current-dollar estimates are largely based on the components of Gross Domestic Income from the National Income and Product Accounts. Value added is the sum of compensation of employees, property-type income, and indirect business taxes and nontax liabilities.	Receipts, value of shipments, inventory change and cost of materials data are obtained from the Bureau of the Census for 4-digit establishment groups in manufacturing.	A real output series was constructed for comparison purposes only by Tornqvist aggregation of the BLS real sectoral output series for SIC 3-digit manufacturing industries.	Industry output indexes are prepared from basic data published by various public and private agencies, using the greatest level of detail available. Bureau of the Census quinquennial survey data and other Census Survey data are used extensively in developing output statistics for manufacturing, trade, and services industries. The U.S. Geological Survey compiles most of the information for the mining and cement industries. Other important Government sources include the U.S. Departments of Energy, Agriculture, Transportation, and Housing and Urban Development, and the Federal Railroad Administration, the Federal Reserve Board, and the Federal Deposit Insurance Corporation. In addition, a wide range of industry trade sources are used to provide detailed data.
Deflation Procedure	Deflation is generally done with price indexes obtained from the Bureau of Labor Statistics, the NIPAs, and trade sources. Deflation takes place at the most detailed component level possible.	Deflation is generally done with price indexes obtained from the Bureau of Labor Statistics, the NIPAs, and trade sources.	Primary product, secondary product, and miscellaneous receipt deflators are largely derived from the Bureau of Labor Statistics' Producer Price Indexes, but also BEA's deflators for computers, selected semiconductor products, telephone switching equipment, local area network equipment, and government purchases. In the computation of these quantity and price indexes, the four-digit industry shipments are first decomposed into their components: primary products, secondary products, and miscellaneous receipts. Each component is then deflated separately before applying the chain-type index formulas.	Double deflation is used in most cases.	Deflation is done at the 5-digit product code level by BEA using primarily BLS producer price indexes. In some instances, 5-digit price estimates developed by BEA are used. Four-digit industry real output is aggregated by BEA from the 5-digit indexes, and then BLS Tornqvist-aggregates from the 4-digit to the 2-digit level.	None.	Deflation is done at the 5-digit product code level using BLS Producer Price Indexes. For a small number of product classes, such as selected electronic products, price deflators developed by BEA, are used. In a few other product classes, a weighted deflator is specifically developed.
Aggregation Methods	Fisher Index	Laspeyres Index	Fisher Index	Fisher Double-Deflation Index	Constant dollar output at the SIC 2-digit level is computed as a Tornqvist Index of the 4-digit industry data.	Constant dollar output at the SIC 2-digit level is computed as a Tornqvist Index of the BLS real sectoral output for the SIC 3-digit manufacturing industries.	Constant dollar output at the SIC 4-digit level is computed as a Tornqvist Index of the 5-digit product class data.

Attribute	BEA Published Gross Output Y^{G}_{BEA-P}	BEA Unpublished Unadjusted Gross Output for Nonmanufacturing Detailed Industries $Y^{G-2,3,4}_{BEA-U}$	BEA Unpublished Sum of Shipments Output Series for Detailed Manufacturing Industries $Y^{SS-2,3,4}_{BEA-U}$	BEA Published Value Added Output Series Y^{VA}_{BEA-P}	BLS Published Sectoral Output Series for Manufacturing Industries $Y^{S-1,2}_{BLS-P}$	BLS Unpublished Sectoral Output Series for SIC 2-digit Manufacturing Industries Y^{S-2}_{BLS-U}	BLS Published Sectoral Output Series for Detailed Industries $Y^{S-3,4}_{BLS-P}$
Data Available	Current-dollar output data are available for 1977-2001. Chain-type quantity and price indexes (1996=100) are available for 1977-2001. Data are available on the BEA web-site, **www.bea.gov**.	Current dollar receipts data are available for 1977-2001. Constant dollar output data are available for 1977-86 in 1987 dollars and for 1988-2001 in 1996 dollars. Constant (1987) dollar and constant (1996) dollar estimates are available for 1987. Data are available on the BEA web-site, **www.bea.gov.**	Current dollar shipments data are available for 1977-2001. Chain-type quantity and price indexes with 1987=100 are available for 1977-86 and chain type quantity and price indexes with 1996=100 are available for 1988-2001. Chain-type quantity and price indexes with both 1987=100 and 1996=100 are available for 1987. Data are available on the BEA web-site, **www.bea.gov**.	Current-dollar output data are available for 1947-2001. Chain-type quantity and price indexes (1996=100) are available for 1977-2001. Chain-dollar data are also available. Data are available on the BEA web-site, **www.bea.gov**.	Current and constant dollar output data are available annually for 1947-2000. Data are available on the BLS web-site, **www.bls.gov**.	Current and constant dollar output data are available annually for 1987-2000. Data are constructed for comparison purposes only and are available from the authors.	Current and constant dollar output data are available annually for all industries, for 1987-2000. For selected industries, data extend back as far as 1947. Data are available on the BLS web-site, **www.bls.gov**.

Table A2. BEA and BLS Output Measure Availability for Detailed Industries,1987-2001

SIC Industry	SIC 2-Digit Output Measures Available:	SIC 2-Digit Output Measures Available: BEA only or BLS only	SIC 2-Digit Output Measures Available: BEA and BLS Series	SIC 3-Digit Output Measure Comparisons Possible	SIC 4-Digit Output Measure Comparisons Possible
01, Agricultural Production Crops	NA			**No**	**No**
02, Agricultural Production Livestock and Animal Specialties	NA			**No**	**No**
07, Agricultural Services	NA			**No**	**No**
08, Forestry		$Y^{G\text{-}2}_{BEA\text{-}U}$		**No**	**No**
09, Fishing, Hunting and Trapping	NA			**No**	**No**
10, Metal Mining*			$Y^{G\text{-}2}_{BEA\text{-}P}$ $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	**Selected Industries**	**Selected Industries**
12, Coal Mining			$Y^{G\text{-}2}_{BEA\text{-}P}$ $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	**No**	**No**
13, Oil and Gas Extraction			$Y^{G\text{-}2}_{BEA\text{-}P}$ $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$ $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	**No**	**No**
14, Mining And Quarrying Of Nonmetallic Minerals, Except Fuels			$Y^{G\text{-}2}_{BEA\text{-}P}$ $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$ $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	**Selected Industries**	**No**
15, Building Construction General Contractors and Operative Builders	NA			**No**	**No**
16, Heavy Construction Other Than Building Construction Contractors	NA			**No**	**No**
17, Construction Special Trade Contractors	NA			**No**	**No**
20, Food and Kindred Products			$Y^{G\text{-}2}_{BEA\text{-}P}$ $Y^{G\text{-}2}_{BEA\text{-}U}$ $Y^{S\text{-}2}_{BLS\text{-}M\text{-}P}$ $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	**All Industries**	**All Industries**
21, Tobacco Products			$Y^{G\text{-}2}_{BEA\text{-}P}$ $Y^{G\text{-}2}_{BEA\text{-}U}$ $Y^{S\text{-}2}_{BLS\text{-}M\text{-}P}$ $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	**All Industries**	**All Industries**

NOTE: BOLD type indicates industries with SIC 2-digit output measure differences and * indicates industries with case studies completed.

Table A2. BEA and BLS Output Measure Availability for Detailed Industries,1987-2001

SIC Industry	SIC 2-Digit Output Measures Available:	SIC 2-Digit Output Measures Available: BEA only or BLS only	SIC 2-Digit Output Measures Available: BEA and BLS Series	SIC 3-Digit Output Measure Comparisons Possible	SIC 4-Digit Output Measure Comparisons Possible
22, Textile Mill Products			Y^{G-2}_{BEA-P} Y^{G-2}_{BEA-U} $Y^{S-2}_{BLS-M-P}$ $Y^{S-2}_{BLS-I-U}$	**All Industries**	**All Industries**
23, Apparel and Other Finished Products Made From Fabrics and Similar Materials			Y^{G-2}_{BEA-P}, Y^{G-2}_{BEA-U}, $Y^{S-2}_{BLS-M-P}$, and $Y^{S-2}_{BLS-I-U}$	**All Industries**	**All Industries**
24, Lumber and Wood Products, Except Furniture			Y^{G-2}_{BEA-P} Y^{G-2}_{BEA-U} $Y^{S-2}_{BLS-M-P}$ $Y^{S-2}_{BLS-I-U}$	**All Industries**	**All Industries**
25, Furniture and Fixtures			Y^{G-2}_{BEA-P} Y^{G-2}_{BEA-U} $Y^{S-2}_{BLS-M-P}$ $Y^{S-2}_{BLS-I-U}$	**All Industries**	**All Industries**
26, Paper and Allied Products			Y^{G-2}_{BEA-P} Y^{G-2}_{BEA-U} $Y^{S-2}_{BLS-M-P}$ $Y^{S-2}_{BLS-I-U}$	**All Industries**	**All Industries**
27, Printing, Publishing, and Allied Industries *			Y^{G-2}_{BEA-P} Y^{G-2}_{BEA-U} $Y^{S-2}_{BLS-M-P}$ $Y^{S-2}_{BLS-I-U}$	**All Industries**	**All Industries**
28, Chemicals and Allied Products			Y^{G-2}_{BEA-P} Y^{G-2}_{BEA-U} $Y^{S-2}_{BLS-M-P}$ $Y^{S-2}_{BLS-I-U}$	**All Industries**	**All Industries**

NOTE: BOLD type indicates industries with SIC 2-digit output measure differences and * indicates industries with case studies completed.

Table A2. BEA and BLS Output Measure Availability for Detailed Industries,1987-2001

SIC Industry	SIC 2-Digit Output Measures Available:	SIC 2-Digit Output Measures Available: BEA only or BLS only	SIC 2-Digit Output Measures Available: BEA and BLS Series	SIC 3-Digit Output Measure Comparisons Possible	SIC 4-Digit Output Measure Comparisons Possible
29, Petroleum Refining and Related Industries *			$Y^{G\text{-}2}_{BEA\text{-}P}$ $Y^{G\text{-}2}_{BEA\text{-}U}$ $Y^{S\text{-}2}_{BLS\text{-}M\text{-}P}$ $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	**All Industries**	**All Industries**
30, Rubber and Miscellaneous Plastics Products			$Y^{G\text{-}2}_{BEA\text{-}P}$ $Y^{G\text{-}2}_{BEA\text{-}U}$ $Y^{S\text{-}2}_{BLS\text{-}M\text{-}P}$ $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	**All Industries**	**All Industries**
31, Leather and Leather Products *			$Y^{G\text{-}2}_{BEA\text{-}P}$ $Y^{G\text{-}2}_{BEA\text{-}U}$ $Y^{S\text{-}2}_{BLS\text{-}M\text{-}P}$ $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	**All Industries**	**All Industries**
32, Stone, Clay, Glass, and Concrete Products			$Y^{G\text{-}2}_{BEA\text{-}P}$ $Y^{G\text{-}2}_{BEA\text{-}U}$ $Y^{S\text{-}2}_{BLS\text{-}M\text{-}P}$ $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	**All Industries**	**All Industries**
33, Primary Metal Industries			$Y^{G\text{-}2}_{BEA\text{-}P}$ $Y^{G\text{-}2}_{BEA\text{-}U}$ $Y^{S\text{-}2}_{BLS\text{-}M\text{-}P}$ $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	**All Industries**	**All Industries**
34, Fabricated Metal Products, Except Machinery and Transportation Equipment			$Y^{G\text{-}2}_{BEA\text{-}P}$ $Y^{G\text{-}2}_{BEA\text{-}U}$ $Y^{S\text{-}2}_{BLS\text{-}M\text{-}P}$ $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	**All Industries**	**All Industries**
35, Industrial and Commercial Machinery and Computer Equipment *			$Y^{G\text{-}2}_{BEA\text{-}P}$ $Y^{G\text{-}2}_{BEA\text{-}U}$ $Y^{S\text{-}2}_{BLS\text{-}M\text{-}P}$ $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	**All Industries**	**All Industries**

NOTE: BOLD type indicates industries with SIC 2-digit output measure differences and * indicates industries with case studies completed.

Table A2. BEA and BLS Output Measure Availability for Detailed Industries,1987-2001

80 SIC Industry	SIC 2-Digit Output Measures Available:	SIC 2-Digit Output Measures Available: BEA only or BLS only	SIC 2-Digit Output Measures Available: BEA and BLS Series	SIC 3-Digit Output Measure Comparisons Possible	SIC 4-Digit Output Measure Comparisons Possible
36, Electronic and Other Electrical Equipment and Components, Except Computer Equipment			Y^{G-2}_{BEA-P} Y^{G-2}_{BEA-U} $Y^{S-2}_{BLS-M-P}$ $Y^{S-2}_{BLS-I-U}$	**All Industries**	**All Industries**
37, Transportation Equipment			$Y^{S-2}_{BLS-M-P}$ $Y^{S-2}_{BLS-I-U}$	**All Industries**	**All Industries**
38, Measuring, Analyzing, and Controlling Instruments; Photographic, Medical and Optical Goods; Watches and Clocks *			Y^{G-2}_{BEA-P} $^{G-2}_{BEA-U}$ $Y^{S-2}_{BLS-M-P}$ $Y^{S-2}_{BLS-I-U}$	**All Industries**	**All Industries**
39, Miscellaneous Manufacturing Industries			Y^{G-2}_{BEA-P} Y^{G-2}_{BEA-U} $Y^{S-2}_{BLS-M-P}$ $Y^{S-2}_{BLS-I-U}$	**All Industries**	**All Industries**
40, Railroad Transportation			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**No**	**No**
41, Local And Suburban Transit And Interurban Highway Passenger Transportation			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**No**	**No**
42, Motor Freight Transportation And Warehousing			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**No**	**No**
43, United States Postal Service		$Y^{S-2}_{BLS-I-U}$		**All Industries** *(*431 with 4311)*	**All Industries** *(*431 with 4311)*
44, Water Transportation			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**No**	**No**
45, Transportation By Air			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**No**	**No**
46, Pipelines Except Natural Gas			Y^{G-2}_{BEA-P} Y^{G-2}_{BEA-U} $Y^{G-2}_{BLS-M-U}$	**No**	**No**

NOTE: BOLD type indicates industries with SIC 2-digit output measure differences and * indicates industries with case studies completed.

Table A2. BEA and BLS Output Measure Availability for Detailed Industries,1987-2001

SIC Industry	SIC 2-Digit Output Measures Available:	SIC 2-Digit Output Measures Available: BEA only or BLS only	SIC 2-Digit Output Measures Available: BEA and BLS Series	SIC 3-Digit Output Measure Comparisons Possible	SIC 4-Digit Output Measure Comparisons Possible
47, Transportation Services			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**No**	**No**
48, Communications *			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**Selected Industries**	**No**
49, Electric, Gas, And Sanitary Services			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**No**	**No**
50, Wholesale Trade-Durable Goods		$Y^{S-2}_{BLS-I-U}$		**All Industries**	**No**
51, Wholesale Trade-Non-durable Goods		$Y^{S-2}_{BLS-I-U}$		**All Industries**	**No**
52, Building Materials, Hardware, Garden Supply, And Mobile Home Dealers		$Y^{S-2}_{BLS-I-U}$		**Selected Industries**	**No**
53, General Merchandise Stores		$Y^{S-2}_{BLS-I-U}$		**Selected Industries**	**No**
54, Food Stores		$Y^{S-2}_{BLS-I-U}$		**Selected Industries**	**No**
55, Automotive Dealers And Gasoline Service Stations		$Y^{S-2}_{BLS-I-U}$		**Selected Industries**	**No**
56, Apparel And Accessory Stores		$Y^{S-2}_{BLS-I-U}$		**Selected Industries**	**No**
57, Home Furniture, Furnishings, And Equipment Stores		$Y^{S-2}_{BLS-I-U}$		**No**	**Selected Industries**
58, Eating And Drinking Places		$Y^{S-2}_{BLS-I-U}$		**No**	**All Industries**
59, Miscellaneous Retail		$Y^{S-2}_{BLS-I-U}$		**Selected Industries**	**Selected Industries**
60, Depository Institutions		Y^{G-2}_{BEA-P}		**No**	**No**
61, Non-depository Credit Institutions		Y^{G-2}_{BEA-P}		**No**	**No**
62, Security And Commodity Brokers, Dealers, Exchanges, And Services			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**No**	**No**
63, Insurance Carriers			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**No**	**No**

NOTE: BOLD type indicates industries with SIC 2-digit output measure differences and * indicates industries with case studies completed.

Table A2. BEA and BLS Output Measure Availability for Detailed Industries,1987-2001

SIC Industry	SIC 2-Digit Output Measures Available:	SIC 2-Digit Output Measures Available: BEA only or BLS only	SIC 2-Digit Output Measures Available: BEA and BLS Series	SIC 3-Digit Output Measure Comparisons Possible	SIC 4-Digit Output Measure Comparisons Possible
64, Insurance Agents, Brokers And Service			Y^{G-2}_{BEA-P} Y^{G-2}_{BEA-U} $Y^{G-2}_{BLS-M-U}$	**No**	**No**
65, Real Estate		Y^{G-2}_{BEA-P}		**No**	**No**
67, Holding And Other Investment Offices		Y^{G-2}_{BEA-P} Y^{G-2}_{BEA-U}		**No**	**No**
70, Hotels, Rooming Houses, Camps, And Other Lodging Places			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**No**	**No**
72, Personal Services *			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$ $Y^{S-2}_{BLS-I-U}$	**Selected Industries**	**Selected Industries**
73, Business Services		Y^{G-2}_{BEA-P}		**No**	**No**
75, Automotive Repair, Services, And Parking			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**Selected Industries**	**No**
76, Miscellaneous Repair Services		Y^{G-2}_{BEA-P}		**No**	**No**
78, Motion Pictures			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**Selected Industries**	**No**
79, Amusement And Recreation Services			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**No**	**No**
80, Health Services			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**No**	**No**
81, Legal Services		Y^{G-2}_{BEA-P} Y^{G-2}_{BEA-U}		**No**	**No**
82, Educational Services			Y^{G-2}_{BEA-P} $Y^{G-2}_{BLS-M-U}$	**No**	**No**
83, Social Services		Y^{G-2}_{BEA-P}		**No**	**No**
84, Museums, Art Galleries, and Botanical and Zoological Gardens	NA			**No**	**No**

NOTE: BOLD type indicates industries with SIC 2-digit output measure differences and * indicates industries with case studies completed.

Table A2. BEA and BLS Output Measure Availability for Detailed Industries,1987-2001

SIC Industry	SIC 2-Digit Output Measures Available:	SIC 2-Digit Output Measures Available: BEA only or BLS only	SIC 2-Digit Output Measures Available: BEA and BLS Series	SIC 3-Digit Output Measure Comparisons Possible	SIC 4-Digit Output Measure Comparisons Possible
86, Membership Organizations		Y^{G-2}_{BEA-P}		**No**	**No**
87, Engineering, Accounting, Research, Management and Related Services	NA			**No**	**No**
88, Private Households	NA			**No**	**No**
91, Executive, Legislative, And General Government, Except Finance	NA			**No**	**No**
92, Justice, Public Order, And Safety	NA			**No**	**No**
93, Public Finance, Taxation, And Monetary Policy	NA			**No**	**No**
94, Administration Of Human Resource Programs	NA			**No**	**No**
95, Administration Of Environmental Quality And Housing Programs	NA			**No**	**No**
96, Administration Of Economic Programs	NA			**No**	**No**
97, National Security And International Affairs	NA			**No**	**No**
99, Nonclassifiable Establishments	NA			**No**	**No**

NOTE: BOLD type indicates industries with SIC 2-digit output measure differences and * indicates industries with case studies completed.

Table A3. Constant and Current Dollar Trends, Selected Industries

Industry	Output Measure	Constant $		Current $		Constant $ less Current $		Acceleration, Constant $	Acceleration, Current $	Difference in Constant and Current $ Acceleration (for each measure)	Output Measure Comparisons	Correlation Coefficient, *Annual Percent Change in Constant Dollar Output Measures*	Correlation Coefficient, *Annual Percent Change in Current Dollar Output Measures*
		(90-95)	(95-00)	(90-95)	(95-00)	(90-95)	(95-00)						
10, Metal Mining	$Y^{G\text{-}2}_{BEA\text{-}P}$	2.08	-0.48	2.72	-5.62	-0.64	5.14	-2.56	-8.34	5.78	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$		
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	1.69	0.65	2.5	0.89	-0.81	-0.24	-1.04	-1.61	0.57		0.927	0.83
1011, Iron Ores	$Y^{G\text{-}4}_{BEA\text{-}U}$	3.21	0.18	3.84	-1.55	-0.62	1.73	-3.03	-5.39	2.35	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}U}$		
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}U}$	1.88	0.13	0.40	-1.70	1.48	1.83	-1.75	-2.10	0.35		0.960	0.915
1021, Copper Ores	$Y^{G\text{-}4}_{BEA\text{-}U}$	2.39	-5.43	4.79	-13.58	-2.41	8.15	-7.81	-18.37	10.56	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	2.86	-4.90	5.18	-12.43	-2.32	7.52	-7.77	-17.60	9.84		0.87	0.987
1031, Lead and Zinc Ores	$Y^{G\text{-}4}_{BEA\text{-}U}$	1.61	5.24	-3.60	5.30	5.21	-0.05	3.64	8.89	-5.26	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}U}$		
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}U}$	8.81	4.91	-3.59	5.53	12.39	-0.62	-3.90	9.11	-13.01		0.77	0.985
1041, Gold Ores	$Y^{G\text{-}4}_{BEA\text{-}U}$	2.75	2.17	2.89	-4.25	-0.14	6.43	-0.58	-7.15	6.57	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	1.29	2.08	1.64	-4.24	-0.35	6.32	0.79	-5.89	6.68		0.98	0.987
1044, Silver Ores	$Y^{G\text{-}4}_{BEA\text{-}U}$	-8.53	3.54	-7.11	2.96	-1.42	0.58	12.07	10.07	2.00	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}U}$		
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}U}$	-4.83	2.53	-4.65	2.91	-0.17	-0.38	7.36	7.57	-0.21		0.77	0.921
1061, Ferroalloy Ores, Except Vanadium	*No BEA or BLS output series available.*												
1081, Metal Mining Services	*Only a single series ($Y^{G\text{-}4}_{BEA\text{-}U}$) is available.*												
1094, Uranium-radium-vanadium Ores	*Only a single series ($Y^{G\text{-}4}_{BEA\text{-}U}$) is available.*												
1099, Miscellaneous Metal Ores, NEC	*Only a single series ($Y^{G\text{-}4}_{BEA\text{-}U}$) is available.*												

Table A3. Constant and Current Dollar Trends, Selected Industries

Industry	Output Measure	Constant $		Current $		Constant $ less Current $		Acceleration, Constant $	Acceleration, Current $	Difference in Constant and Current $ Acceleration (for each measure)	Output Measure Comparisons	Correlation Coefficient, *Annual Percent Change in Constant Dollar Output Measures*	Correlation Coefficient, *Annual Percent Change in Current Dollar Output Measures*
		(90-95)	(95-00)	(90-95)	(95-00)	(90-95)	(95-00)						
13, Oil and Gas Extraction	Y^{G-2}_{BEA-P}	-0.4	0.74	-3.81	13.84	3.41	-13.1	1.14	17.65	-16.51	Y^{G-2}_{BEA-P} and $Y^{S-2}_{BLS-I-U}$	0.684	0.980
	$Y^{S-2}_{BLS-I-U}$	-0.75	-0.75	-5.28	14.88	4.53	-15.63	0	20.16	-20.16	Y^{G-2}_{BEA-P} and $Y^{G-2}_{BLS-M-U}$	0.919	0.770
	$Y^{G-2}_{BLS-M-U}$	-1.12	1.12	-4.65	2.89	3.53	-1.77	2.24	7.54	-5.30	$Y^{S-2}_{BLS-I-U}$ and $Y^{G-2}_{BLS-M-U}$	0.697	0.710
20, Food and Kindred Products	Y^{G-2}_{BEA-P}	1.95	1.23	2.84	2.09	-0.89	-0.86	-0.72	-0.75	0.03	Y^{G-2}_{BEA-P} and $Y^{S-2}_{BLS-I-U}$	0.979	0.990
	$Y^{S-2}_{BLS-I-U}$	1.96	1.27	2.81	1.98	-0.85	-0.71	-0.69	-0.83	0.14	Y^{G-2}_{BEA-P} and $Y^{G-2}_{BLS-M-U}$	0.640	0.740
	$Y^{G-2}_{BLS-M-U}$	2.67	1.02	3.48	1.88	-0.81	-0.86	-1.65	-1.6	-0.05	$Y^{S-2}_{BLS-I-U}$ and $Y^{G-2}_{BLS-M-U}$	0.687	0.760
21, Tobacco Products	Y^{G-2}_{BEA-P}	0.33	-2.62	2.74	7.87	-2.41	-10.49	-2.95	5.13	-8.08	Y^{G-2}_{BEA-P} and $Y^{S-2}_{BLS-I-U}$	0.996	0.980
	$Y^{S-2}_{BLS-I-U}$	0.82	-2.78	2.09	8.3	-1.27	-11.08	-3.6	6.21	-9.81	Y^{G-2}_{BEA-P} and $Y^{G-2}_{BLS-M-U}$	0.977	0.810
	$Y^{G-2}_{BLS-M-U}$	0.7	-3.2	2.19	4.46	-1.49	-7.66	-3.9	2.27	-6.17	$Y^{S-2}_{BLS-I-U}$ and $Y^{G-2}_{BLS-M-U}$	0.991	0.890
27, Printing, Publishing, and Allied Industries	Y^{G-2}_{BEA-P}	-0.47	1.22	3.17	3.89	-3.64	-2.67	1.69	0.72	0.97	Y^{G-2}_{BEA-P} and $Y^{S-2}_{BLS-I-U}$	0.769	0.699
	$Y^{S-2}_{BLS-I-U}$	-0.42	2.77	3.31	5.51	-3.73	-2.74	3.19	2.2	0.99	Y^{G-2}_{BEA-P} and $Y^{G-2}_{BLS-M-U}$	0.904	0.883
	$Y^{G-2}_{BLS-M-U}$	-0.1	1.18	3.54	3.79	-3.64	-2.61	1.28	0.25	1.03	$Y^{S-2}_{BLS-I-U}$ and $Y^{G-2}_{BLS-M-U}$	0.727	0.660
271, Newspapers: Publishing or Publishing and Printing	Y^{G-3}_{BEA-U}	-3.79	0.19	1.38	4.47	-5.17	-4.28	3.97	3.09	0.88	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	-3.86	2.20	1.37	6.50	-5.23	-4.30	6.06	5.13	0.93		0.907	0.818
272, Periodicals: Publishing, or Publishing and Printing	Y^{G-3}_{BEA-U}	-0.71	3.17	2.74	6.60	-3.45	-3.43	3.88	3.86	0.02	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	-1.15	7.39	2.73	11.13	-3.88	-3.74	8.55	8.40	0.15		0.692	0.689

Table A3. Constant and Current Dollar Trends, Selected Industries

Industry	Output Measure	Constant $		Current $		Constant $ less Current $		Acceleration, Constant $	Acceleration, Current $	Difference in Constant and Current $ Acceleration (for each measure)	Output Measure Comparisons	Correlation Coefficient, *Annual Percent Change in Constant Dollar Output Measures*	Correlation Coefficient, *Annual Percent Change in Current Dollar Output Measures*
		90-95)	(95-00)	(90-95)	(95-00)	(90-95)	(95-00)						
273, Books	Y^{G-3}_{BEA-U}	1.64	0.12	5.52	2.78	-3.88	-2.66	-1.52	-2.74	1.22	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	1.80	1.25	5.52	4.07	-3.72	-2.82	-0.55	-1.45	0.90		0.891	0.877
274, Miscellaneous Publishing	Y^{G-3}_{BEA-U}	1.27	2.46	5.90	6.46	-4.63	-4.00	1.19	0.56	0.63	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	1.20	8.09	5.78	12.40	-4.58	-4.31	6.89	6.62	0.27		0.888	0.877
275, Commercial Printing	Y^{G-3}_{BEA-U}	1.50	1.83	3.88	3.23	-2.38	-1.40	0.33	-0.65	0.98	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	1.47	1.94	3.91	3.28	-2.44	-1.34	0.47	-0.63	1.10		0.995	0.998
276, Manifold Business Forms	Y^{G-3}_{BEA-U}	-5.58	-3.52	-0.12	-1.25	-5.46	-2.27	2.06	-1.13	3.19	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	-5.74	-3.60	-0.10	-1.53	-5.64	-2.07	2.14	-1.43	3.57		0.994	0.996
277, Greeting Cards	Y^{G-3}_{BEA-U}	-0.54	1.05	4.38	3.77	-4.92	-2.72	1.59	-0.61	2.20	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	-1.14	0.88	4.02	3.55	-5.16	-2.67	2.02	-0.47	2.49		0.269	0.196
278, Blankbooks, Looseleaf Binders, and Bookbinding	Y^{G-3}_{BEA-U}	1.73	0.23	5.52	1.65	-3.79	-1.42	-1.50	-3.87	2.37	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	1.59	0.11	5.41	1.52	-3.82	-1.41	-1.48	-3.89	2.41		0.994	0.994
279, Service Industries for the Printing Trade	Y^{G-3}_{BEA-U}	0.03	-2.24	0.86	-1.46	-0.83	-0.78	-2.27	-2.32	0.05	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	0.00	-2.12	0.85	-1.48	-0.85	-0.64	-2.12	-2.33	0.21		0.998	0.998

Table A3. Constant and Current Dollar Trends, Selected Industries

Industry	Output Measure	Constant $		Current $		Constant $ less Current $		Acceleration, Constant $	Acceleration, Current $	Difference in Constant and Current $ Acceleration (for each measure)	Output Measure Comparisons	Correlation Coefficient, *Annual Percent Change in Constant Dollar Output Measures*	Correlation Coefficient, *Annual Percent Change in Current Dollar Output Measures*
		(90-95)	(95-00)	(90-95)	(95-00)	(90-95)	(95-00)						
29, Petroleum Refining and Related Industries	$Y^{G\text{-}2}_{BEA\text{-}P}$	0.81	1.08	-2.53	8.88	3.34	-7.8	0.27	11.41	-11.14	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	-0.044	0.997
	$Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	1.2	1.58	-2.86	9.27	4.06	-7.69	0.38	12.13	-11.75	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	-0.013	0.994
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	0.88	1.51	-2.76	9.2	3.64	-7.69	0.63	11.96	-11.33	$Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	0.988	0.992
291, Petroleum Refining	$Y^{G\text{-}3}_{BEA\text{-}U}$	0.63	1.20	-3.19	9.47	3.82	-8.26	0.57	12.66	-12.08	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	1.15	1.57	-3.38	9.73	4.52	-8.17	0.42	13.11	-12.69		-0.130	0.998
295, Asphalt Paving and Roofing Materials	$Y^{G\text{-}3}_{BEA\text{-}U}$	1.95	2.96	2.74	5.75	-0.79	-2.79	1.01	3.01	-2.00	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	1.96	2.87	2.71	5.93	-0.76	-3.06	0.91	3.21	-2.30		0.997	0.997
299, Miscellaneous Products of Petroleum and Coal	$Y^{G\text{-}3}_{BEA\text{-}U}$	1.11	0.69	3.05	2.70	-1.93	-2.01	-0.43	-0.35	-0.08	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	0.94	0.58	2.91	2.58	-1.96	-2.00	-0.36	-0.33	-0.03		0.984	0.982
31, Leather and Leather Products	$Y^{G\text{-}2}_{BEA\text{-}P}$	-1.97	-1.59	-0.13	-1.42	-1.84	-0.17	0.38	-1.29	1.67	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	0.949	0.953
	$Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	-2.67	-1.15	-0.85	-0.92	-1.82	-0.23	1.52	-0.07	1.59	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	0.923	0.915
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	-3.14	-1.53	-1.28	-1.31	-1.86	-0.22	1.61	-0.03	1.64	$Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	0.969	0.951
311, Leather Tanning and Finishing	$Y^{G\text{-}3}_{BEA\text{-}U}$	4.22	0.13	6.02	-1.07	-1.80	1.20	-4.09	-7.10	3.01	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}U}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}U}$	3.41	1.65	5.15	0.58	-1.74	1.07	-1.76	-4.57	2.81		0.984	0.984
313, Boot and Shoe Cut Stock and Findings	$Y^{G\text{-}3}_{BEA\text{-}U}$	-8.30	-8.63	-6.71	-7.89	-1.59	-0.74	-0.33	-1.18	0.85	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}U}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}U}$	-8.14	0.30	-6.64	1.10	-1.50	-0.80	8.44	7.75	0.69		0.611	0.625

Table A3. Constant and Current Dollar Trends, Selected Industries

Industry	Output Measure	Constant $		Current $		Constant $ less Current $		Acceleration, Constant $	Acceleration, Current $	Difference in Constant and Current $ Acceleration (for each measure)	Output Measure Comparisons	Correlation Coefficient, *Annual Percent Change in Constant Dollar Output Measures*	Correlation Coefficient, *Annual Percent Change in Current Dollar Output Measures*
		(90-95)	(95-00)	(90-95)	(95-00)	(90-95)	(95-00)						
314, Footwear, Except Rubber	Y^{G-3}_{BEA-U}	-3.28	-5.49	-1.29	-4.70	-1.99	-0.79	-2.21	-3.41	1.20	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	-3.62	-7.07	-1.65	-6.44	-1.97	-0.63	-3.45	-4.79	1.34		0.984	0.985
315, Leather Gloves and Mittens	Y^{G-3}_{BEA-U}	-7.49	5.54	-5.21	7.15	-2.28	-1.61	13.03	12.36	0.67	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-U}$		
	$Y^{S-3}_{BLS-I-U}$	-7.95	5.71	-5.84	7.22	-2.11	-1.51	13.66	13.06	0.60		0.992	0.992
316, Luggage	Y^{G-3}_{BEA-U}	-4.50	5.53	-3.48	6.48	-1.02	-0.95	10.03	9.96	0.07	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-U}$		
	$Y^{S-3}_{BLS-I-U}$	-4.00	4.75	-2.87	5.99	-1.13	-1.24	8.75	8.85	-0.10		0.971	0.975
317, Handbags and Other Leather Goods	Y^{G-3}_{BEA-U}	-7.35	-1.27	-6.61	-0.94	-0.74	-0.33	6.08	5.66	0.42	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-U}$		
	$Y^{S-3}_{BLS-I-U}$	-7.40	-0.91	-6.61	-0.54	-0.79	-0.37	6.49	6.07	0.42		0.996	0.996
319, Leather Goods, nec	Y^{G-3}_{BEA-U}	-8.75	7.86	-7.39	9.94	-1.36	-2.08	16.61	17.33	-0.72	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-U}$		
	$Y^{S-3}_{BLS-I-U}$	-8.63	7.13	-7.23	9.14	-1.40	-2.01	15.76	16.38	-0.62		0.994	0.995
35, Industrial and Commercial Machinery and Computer Equipment	Y^{G-2}_{BEA-P}	8.44	9.38	6.66	3.6	1.78	5.78	0.94	-3.06	4.00	Y^{G-2}_{BEA-P} and $Y^{S-2}_{BLS-I-U}$	0.991	0.989
	$Y^{S-2}_{BLS-I-U}$	8.02	10.05	6.61	4.12	1.41	5.93	2.03	-2.49	4.52	Y^{G-2}_{BEA-P} and $Y^{G-2}_{BLS-M-U}$	0.976	0.975
	$Y^{G-2}_{BLS-M-U}$	7.84	10.03	6.21	4.12	1.63	5.91	2.19	-2.09	4.28	$Y^{S-2}_{BLS-I-U}$ and $Y^{G-2}_{BLS-M-U}$	0.985	0.986
351, Engines and Turbines	Y^{G-3}_{BEA-U}	3.62	4.41	6.00	5.28	-2.38	-0.87	0.79	-0.72	1.51	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	3.40	2.35	5.48	5.72	-2.08	-3.37	-1.05	0.23	-1.28		0.955	0.939
352, Farm and Garden Machinery and Equipment	Y^{G-3}_{BEA-U}	2.14	-0.85	4.48	0.42	-2.34	-1.27	-2.99	-4.06	1.07	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	2.13	-0.87	4.43	0.41	-2.30	-1.28	-3.00	-4.02	1.02		0.993	0.992

Table A3. Constant and Current Dollar Trends, Selected Industries

Industry	Output Measure	Constant $		Current $		Constant $ less Current $		Acceleration, Constant $	Acceleration, Current $	Difference in Constant and Current $ Acceleration (for each measure)	Output Measure Comparisons	Correlation Coefficient, *Annual Percent Change in Constant Dollar Output Measures*	Correlation Coefficient, *Annual Percent Change in Current Dollar Output Measures*
		(90-95)	(95-00)	(90-95)	(95-00)	(90-95)	(95-00)						
353, Construction, Mining, and Materials Handling	$Y^{G\text{-}3}_{BEA\text{-}U}$	2.49	3.75	4.50	5.43	-2.01	-1.68	1.26	0.92	0.34	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	2.73	3.83	4.75	5.43	-2.02	-1.60	1.10	0.68	0.42		0.991	0.990
354, Metalworking Machinery and Equipment	$Y^{G\text{-}3}_{BEA\text{-}U}$	3.41	1.46	6.01	2.89	-2.60	-1.43	-1.95	-3.12	1.17	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	3.75	1.11	6.42	2.59	-2.67	-1.48	-2.64	-3.83	1.19		0.991	0.990
355, Special Industry Machinery, Except Metalworking	$Y^{G\text{-}3}_{BEA\text{-}U}$	5.83	5.39	8.48	7.07	-2.65	-1.68	-0.44	-1.42	0.98	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	6.31	5.11	9.08	6.90	-2.77	-1.79	-1.20	-2.18	0.98		0.994	0.993
356, General Industrial Machinery and Equipment	$Y^{G\text{-}3}_{BEA\text{-}U}$	2.36	1.29	5.21	3.16	-2.85	-1.87	-1.07	-2.05	0.98	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	2.36	1.11	5.30	3.01	-2.94	-1.90	-1.25	-2.29	1.04		0.993	0.992
357, Computer and Office Equipment	$Y^{G\text{-}3}_{BEA\text{-}U}$	21.89	32.38	6.94	4.09	14.95	28.29	10.49	-2.85	13.34	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	22.55	35.91	7.43	4.27	15.12	31.64	13.36	-3.16	16.52		0.990	0.981
358, Refrigeration and Service Industry Machinery	$Y^{G\text{-}3}_{BEA\text{-}U}$	5.10	2.61	6.72	3.54	-1.62	-0.93	-2.49	-3.18	0.69	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	5.31	2.72	7.05	3.72	-1.74	-1.00	-2.59	-3.33	0.74		0.994	0.993
359, Miscellaneous Industrial and Commercial	$Y^{G\text{-}3}_{BEA\text{-}U}$	6.80	2.56	8.09	3.72	-1.29	-1.16	-4.24	-4.38	0.14	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	6.73	2.49	8.10	3.69	-1.37	-1.20	-4.24	-4.41	0.17		0.995	0.995

Table A3. Constant and Current Dollar Trends, Selected Industries

Industry	Output Measure	Constant $		Current $		Constant $ less Current $		Acceleration, Constant $	Acceleration, Current $	Difference in Constant and Current $ Acceleration (for each measure)	Output Measure Comparisons	Correlation Coefficient, *Annual Percent Change in Constant Dollar Output Measures*	Correlation Coefficient, *Annual Percent Change in Current Dollar Output Measures*
		90(90-95)	(95-00)	(90-95)	(95-00)	(90-95)	(95-00)						
38, Measuring, Analyzing, and Controlling Instruments, Photographic and Optical Goods, Watches and Clocks	$Y^{G\text{-}2}_{BEA\text{-}P}$	1.05	3.20	2.58	3.43	-1.53	-0.23	2.15	0.85	1.30	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	0.916	0.160
	$Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	0.87	3.41	2.29	3.58	-1.42	-0.17	2.54	1.29	1.25	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	0.597	0.054
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	1.27	4.04	2.71	4.08	-1.44	-0.04	2.77	1.37	1.40	$Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	0.701	0.657
381, Search, Detection, Navigation, Guidance, Aeronautical, and Nautical	$Y^{G\text{-}3}_{BEA\text{-}U}$	-5.25	-0.11	-3.69	0.34	-1.56	-0.45	5.14	4.02	1.12	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	-5.52	0.71	-4.03	1.16	-1.49	-0.45	6.23	5.19	1.04		0.973	0.957
382, Laboratory Apparatus and Analytical, Optical	$Y^{G\text{-}3}_{BEA\text{-}U}$	4.29	2.74	6.28	3.54	-1.99	-0.80	-1.55	-2.74	1.19	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	4.32	2.52	6.26	3.41	-1.94	-0.89	-1.80	-2.86	1.06		0.990	0.985
384, Surgical Medical and Dental Instruments and	$Y^{G\text{-}3}_{BEA\text{-}U}$	3.97	6.98	5.95	6.97	-1.98	0.01	3.01	1.02	1.99	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	3.85	6.73	5.89	6.97	-2.04	-0.24	2.88	1.08	1.80		0.987	0.989
385, Opthalmic Goods	$Y^{G\text{-}3}_{BEA\text{-}U}$	3.90	7.73	5.57	7.00	-1.67	0.73	3.83	1.42	2.41	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	3.45	7.50	5.13	6.81	-1.68	0.69	4.05	1.68	2.37		0.972	0.973
386, Photographic Equipment and Supplies	$Y^{G\text{-}3}_{BEA\text{-}U}$	0.72	0.75	0.58	-0.18	0.14	0.93	0.03	-0.76	0.79	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	0.84	1.39	0.39	-0.64	0.45	2.03	0.55	-1.03	1.58		0.920	0.960
387, Watches, Clocks, Clockwork Operated Devices	$Y^{G\text{-}3}_{BEA\text{-}U}$	-9.33	5.51	-7.74	6.16	-1.59	-0.65	14.84	13.91	0.93	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	-6.57	2.67	-7.11	3.44	0.54	-0.77	9.24	10.55	-1.31		0.880	0.913

Table A3. Constant and Current Dollar Trends, Selected Industries

Industry	Output Measure	Constant $		Current $		Constant $ less Current $		Acceleration, Constant $	Acceleration, Current $	Difference in Constant and Current $ Acceleration (for each measure)	Output Measure Comparisons	Correlation Coefficient, *Annual Percent Change in Constant Dollar Output Measures*	Correlation Coefficient, *Annual Percent Change in Current Dollar Output Measures*
		(90-95)	(95-00)	(90-95)	(95-00)	(90-95)	(95-00)						
39, Miscellaneous Manufacturing	$Y^{G\text{-}2}_{BEA\text{-}P}$	1.44	3.22	3.52	4.13	-2.08	-0.91	1.78	0.61	1.17	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	0.954	0.947
	$Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	2.00	2.82	4.01	3.63	-2.01	-0.81	0.82	-0.38	1.20	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	0.867	0.863
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	2.02	2.85	4.02	3.64	-2	-0.79	0.83	-0.38	1.21	$Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	0.842	0.838
40, Railroad Transportation	$Y^{G\text{-}2}_{BEA\text{-}P}$	3.39	0.67	3.18	1.26	0.21	-0.59	-2.72	-1.92	-0.80	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$		
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	1.63	-0.62	2.41	-0.02	-0.78	-0.6	-2.25	-2.43	0.18		0.638	0.970
41, Local and Suburban Transit and Interurban Highway Passenger Transportation	$Y^{G\text{-}2}_{BEA\text{-}P}$	0.54	2.36	3.71	4.64	-3.17	-2.28	1.82	0.93	0.89	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$		
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	1.59	1.22	5.09	3.73	-3.5	-2.51	-0.37	-1.36	0.99		0.747	0.090
42, Motor Freight Transportation and Warehousing	$Y^{G\text{-}2}_{BEA\text{-}P}$	4.89	4.06	5.56	7.14	-0.67	-3.08	-0.83	1.58	-2.41	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$		
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	4.48	4.63	5.14	6.80	-0.66	-2.17	0.15	1.66	-1.51		0.536	0.980
44, Water Transportation	$Y^{G\text{-}2}_{BEA\text{-}P}$	2.39	4.72	3.76	7.07	-1.37	-2.35	2.33	3.31	-0.98	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$		
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	2.40	-0.52	4.98	1.71	-2.58	-2.23	-2.92	-3.27	0.35		0.544	0.280
45, Transportation by Air	$Y^{G\text{-}2}_{BEA\text{-}P}$	3.14	5.39	4.27	6.90	-1.13	-1.51	2.25	2.63	-0.38	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$		
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	3.84	1.48	4.41	3.11	-0.57	-1.63	-2.36	-1.3	-1.06		0.399	0.360
46, Pipelines, Except Natural Gas	$Y^{G\text{-}2}_{BEA\text{-}P}$	-5.39	0.14	-3.00	-0.85	-2.39	0.99	5.53	2.15	3.38	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$		
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	-1.39	-3.04	1.53	-4.99	-2.92	1.95	-1.65	-6.52	4.87		0.617	0.670

Table A3. Constant and Current Dollar Trends, Selected Industries

Industry	Output Measure	Constant $		Current $		Constant $ less Current $		Acceleration, Constant $	Acceleration, Current $	Difference in Constant and Current $ Acceleration (for each measure)	Output Measure Comparisons	Correlation Coefficient, *Annual Percent Change in Constant Dollar Output Measures*	Correlation Coefficient, *Annual Percent Change in Current Dollar Output Measures*
		(90-95)	(95-00)	(90-95)	(95-00)	(90-95)	(95-00)						
47, Transportation Services	Y^{G-2}_{BEA-P}	4.78	6.21	6.77	7.80	-1.99	-1.59	1.43	1.03	0.40	Y^{G-2}_{BEA-P} and $Y^{G-2}_{BLS-M-U}$		
	$Y^{G-2}_{BLS-M-U}$	4.48	5.75	5.59	2.45	-1.11	3.3	1.27	-3.14	4.41		0.557	0.560
48, Communications	Y^{G-2}_{BEA-P}	5.55	11.38	6.77	11.09	-1.22	0.29	5.83	4.32	1.51	Y^{G-2}_{BEA-P} and $Y^{G-2}_{BLS-M-U}$		
	$Y^{G-2}_{BLS-M-U}$	4.38	6.67	6.06	8.61	-1.68	-1.94	2.29	2.55	-0.26		0.701	0.760
481, Telephone Communications	*Only a single series ($Y^{S-3}_{BLS-I-P}$) is available.*												
482 Telegraph and Other Message Communications	*No BEA or BLS output series available.*												
483 Radio and Television Broadcasting Stations	Y^{G-3}_{BEA-U}	0.08	-0.06	2.65	8.13	-2.57	-8.19	-0.14	5.48	-5.62	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	1.13	2.19	4.14	-0.05	-3.01	2.24	1.06	-4.19	5.25		0.733	0.392
484 Cable and Other Pay Television Stations	Y^{G-3}_{BEA-U}	5.38	8.93	10.42	13.48	-5.04	-4.55	3.55	3.07	0.48	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	2.96	8.21	7.92	13.55	-4.96	-5.34	5.25	5.62	-0.37		0.470	0.494
489, Communications Services, nec	*No BEA or BLS output series available.*												
49, Electric, Gas and Sanitary Services	Y^{G-2}_{BEA-P}	1.96	1.48	3.49	4.40	-1.53	-2.92	-0.48	0.91	-1.39	Y^{G-2}_{BEA-P} and $Y^{G-2}_{BLS-M-U}$		
	$Y^{G-2}_{BLS-M-U}$	0.14	1.63	2.36	2.20	-2.22	-0.57	1.49	-0.16	1.65		0.108	0.650

Table A3. Constant and Current Dollar Trends, Selected Industries

Industry	Output Measure	Constant $		Current $		Constant $ less Current $		Acceleration, Constant $	Acceleration, Current $	Difference in Constant and Current $ Acceleration (for each measure)	Output Measure Comparisons	Correlation Coefficient, *Annual Percent Change in Constant Dollar Output Measures*	Correlation Coefficient, *Annual Percent Change in Current Dollar Output Measures*
		(90-95)	(95-00)	(90-95)	(95-00)	(90-95)	(95-00)						
62, Security and Commodity Brokers, Dealers, Exchanges, and Services	$Y^{G\text{-}2}_{BEA\text{-}P}$	16.11	23.35	17.11	19.02	-1.00	4.33	7.24	1.91	5.33	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$		
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	13.54	22.02	10.55	17.21	2.99	4.81	8.48	6.66	1.82		0.800	0.760
63, Insurance Carriers	$Y^{G\text{-}2}_{BEA\text{-}P}$	-0.15	-1.53	7.10	3.11	-7.25	-4.64	-1.38	-3.99	2.61	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$		
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	0.87	0.64	8.74	4.56	-7.87	-3.92	-0.23	-4.18	3.95		0.718	0.790
64, Insurance Agents, Brokers, and Service	$Y^{G\text{-}2}_{BEA\text{-}P}$	-2.67	4.07	3.91	7.91	-6.58	-3.84	6.74	4	2.74	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$		
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	-0.41	4.03	1.17	4.93	-1.58	-0.9	4.44	3.76	0.68		-0.114	0.040
72, Personal Services	$Y^{G\text{-}2}_{BEA\text{-}P}$	2.45	2.71	5.56	5.44	-3.11	-2.73	0.26	-0.12	0.38	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	0.946	0.930
	$Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$	1.44	2.89	5.00	6.02	-3.56	-3.13	1.45	1.02	0.43	$Y^{G\text{-}2}_{BEA\text{-}P}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	0.900	0.880
	$Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	1.33	3.56	4.48	6.32	-3.15	-2.76	2.23	1.84	0.39	$Y^{S\text{-}2}_{BLS\text{-}I\text{-}U}$ and $Y^{G\text{-}2}_{BLS\text{-}M\text{-}U}$	0.965	0.960
721, Laundry, Cleaning, and Garment Services	$Y^{G\text{-}3}_{BEA\text{-}U}$	1.16	2.78	3.84	4.88	-2.68	-2.10	1.62	1.04	0.58	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	0.82	2.85	3.61	5.00	-2.79	-2.15	2.03	1.39	0.64		0.975	0.986
722, Photographic Studios, Portrait	$Y^{G\text{-}3}_{BEA\text{-}U}$	5.32	0.85	8.48	2.62	-3.16	-1.77	-4.47	-5.87	1.40	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	5.54	1.49	8.71	3.17	-3.17	-1.68	-4.05	-5.54	1.49		0.975	0.972
723, Beauty Shops	$Y^{G\text{-}3}_{BEA\text{-}U}$	2.69	3.06	5.05	6.29	-2.36	-3.23	0.37	1.24	-0.87	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	2.63	3.16	4.99	6.39	-2.36	-3.23	0.53	1.40	-0.87		0.989	0.987
724, Barber Shops	$Y^{G\text{-}3}_{BEA\text{-}U}$	-0.06	1.28	2.93	4.53	-2.99	-3.25	1.34	1.59	-0.25	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$		
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	-0.71	1.61	2.26	4.88	-2.97	-3.27	2.32	2.63	-0.31		0.934	0.934

Table A3. Constant and Current Dollar Trends, Selected Industries

Industry	Output Measure	Constant $		Current $		Constant $ less Current $		Acceleration, Constant $	Acceleration, Current $	Difference in Constant and Current $ Acceleration (for each measure)	Output Measure Comparisons	Correlation Coefficient, *Annual Percent Change in Constant Dollar Output Measures*	Correlation Coefficient, *Annual Percent Change in Current Dollar Output Measures*
		(90-95)	(95-00)	(90-95)	(95-00)	(90-95)	(95-00)						
725, Shoe Repair Shops and Shoeshine Parlors	*Only a single series (Y^{G-3}_{BEA-U}) is available.*												
726, Funeral Service and Crematories	Y^{G-3}_{BEA-U}	1.76	-0.13	7.09	3.87	-5.33	-4.00	-1.89	-3.21	1.32	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$		
	$Y^{S-3}_{BLS-I-P}$	1.39	-0.58	6.70	3.40	-5.31	-3.98	-1.97	-3.30	1.33		0.941	0.959
729, Miscellaneous Personal Services	*Only a single series ($Y^{S-3}_{BLS-I-U}$) is available.*												
78, Motion Pictures	Y^{G-2}_{BEA-P}	3.89	2.95	6.54	6.72	-2.65	-3.77	-0.94	0.18	-1.12	Y^{G-2}_{BEA-P} and $Y^{G-2}_{BLS-M-U}$		
	$Y^{G-2}_{BLS-M-U}$	4.74	6.58	7.40	4.24	-2.66	2.34	1.84	-3.16	5.00		0.458	0.700
79, Amusement and Recreation Services	Y^{G-2}_{BEA-P}	6.74	3.87	10.03	7.62	-3.29	-3.75	-2.87	-2.41	-0.46	Y^{G-2}_{BEA-P} and $Y^{G-2}_{BLS-M-U}$		
	$Y^{G-2}_{BLS-M-U}$	5.85	6.79	8.89	10.20	-3.04	-3.41	0.94	1.31	-0.37		0.337	0.340
82, Educational Services	Y^{G-2}_{BEA-P}	2.86	2.75	6.19	6.48	-3.33	-3.73	-0.11	0.29	-0.40	Y^{G-2}_{BEA-P} and $Y^{G-2}_{BLS-M-U}$		
	$Y^{G-2}_{BLS-M-U}$	0.35	3.68	4.90	7.38	-4.55	-3.7	3.33	2.48	0.85		0.584	0.570

NOTE: SIC 2-digit industry current dollar data: BEA, published (adjusted) current dollar gross output series GOC from BEA file GPO87SIC; BLS industry program, sum of nominal value of production for 3-digit industries into 2-digit groups for manufacturing, and nominal value of production data for 2-digit nonmanufacturing industries; BLS major sector program, value of production series. For 3- and 4-digit industries: BEA, value of shipments data for manufacturing and unadjusted gross output data from GO8701 for nonmanufacturing; BLS industry program, benchmark value of production data.

Table A4. Comparison of Real Output Series: Selected SIC 3- and 4-Digit Industries

SIC 4-Digit Industry	Output Series	Average Annual Growth Rate (1990-95) (1)	Average Annual Growth Rate (1995-00) (2)	Acceleration (2) - (1)	Output Series Comparisons	Difference in Acceleration	Correlation Coefficient
SIC 4-Digit Industries in Major Group 10, Metal Mining Industries							
1011, Iron Ores	$Y^{G\text{-}4}_{BEA\text{-}U}$	3.21	0.18	-3.03	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}U}$	-1.28	0.960
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}U}$	1.88	0.13	-1.75			
1021, Copper Ores	$Y^{G\text{-}4}_{BEA\text{-}U}$	2.39	-5.43	-7.81	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	-0.04	0.872
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	2.86	-4.90	-7.77			
1031, Lead and Zinc Ores	$Y^{G\text{-}4}_{BEA\text{-}U}$	1.61	5.24	3.64	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}U}$	7.54	0.768
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}U}$	8.81	4.91	-3.90			
1041, Gold Ores	$Y^{G\text{-}4}_{BEA\text{-}U}$	2.75	2.17	-0.58	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	-1.36	0.982
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	1.29	2.08	0.79			
1044, Silver Ores	$Y^{G\text{-}4}_{BEA\text{-}U}$	-8.53	3.54	12.07	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}U}$	4.71	0.767
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}U}$	-4.83	2.53	7.36			
1061, Ferroalloy Ores, Except Vanadium	*No BEA or BLS output series available.*						
1081, Metal Mining Services	*Only a single series ($Y^{G\text{-}4}_{BEA\text{-}U}$) is available.*						
1094, Uranium-radium-vanadium Ores	*Only a single series ($Y^{G\text{-}4}_{BEA\text{-}U}$) is available.*						
1099, Miscellaneous Metal Ores, nec	*Only a single series ($Y^{G\text{-}4}_{BEA\text{-}U}$) is available.*						
SIC 4-Digit Industries in Major Group 27, Printing, Publishing and Allied Industries							
2711 Newspapers: Publishing, Or Publishing and Printing	$Y^{G\text{-}4}_{BEA\text{-}U}$	-3.79	0.19	3.97	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	-2.09	0.907
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	-3.86	2.20	6.06			
2721 Periodicals: Publishing, Or Publishing and Printing	$Y^{G\text{-}4}_{BEA\text{-}U}$	-0.71	3.17	3.88	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	-4.66	0.692
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	-1.15	7.39	8.55			
2731 Books: Publishing, Or Publishing and Printing	$Y^{G\text{-}4}_{BEA\text{-}U}$	1.56	-0.31	-1.87	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	-1.14	0.895
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	1.84	1.11	-0.73			
2732 Book Printing	$Y^{G\text{-}4}_{BEA\text{-}U}$	1.98	1.85	-0.13	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	-0.32	0.973
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	1.62	1.81	0.19			
2741 Miscellaneous Publishing	$Y^{G\text{-}4}_{BEA\text{-}U}$	1.27	2.46	1.19	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	-5.70	0.888
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	1.20	8.09	6.89			
2752 Commercial Printing, Lithographic	$Y^{G\text{-}4}_{BEA\text{-}U}$	1.75	2.41	0.66	$Y^{G\text{-}4}_{BEA\text{-}U}$ and $Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	-0.07	0.997
	$Y^{S\text{-}4}_{BLS\text{-}I\text{-}P}$	1.72	2.45	0.73			

Table A4. Comparison of Real Output Series: Selected SIC 3- and 4-Digit Industries

SIC 4-Digit Industry	Output Series	Average Annual Growth Rate (1990-95) (1)	Average Annual Growth Rate (1995-00) (2)	Acceleration (2) - (1)	Output Series Comparisons	Difference in Acceleration	Correlation Coefficient
2754 Commercial Printing, Gravure	Y^{G-4}_{BEA-U}	1.93	-0.40	-2.33	Y^{G-4}_{BEA-U} and $Y^{S-4}_{BLS-I-P}$	0.75	0.975
	$Y^{S-4}_{BLS-I-P}$	2.71	-0.37	-3.08			
2759 Commercial Printing, Not Elsewhere Classified	Y^{G-4}_{BEA-U}	0.51	0.10	-0.41	Y^{G-4}_{BEA-U} and $Y^{S-4}_{BLS-I-P}$	-0.63	0.997
	$Y^{S-4}_{BLS-I-P}$	0.24	0.46	0.22			
2761 Manifold Business Forms	Y^{G-4}_{BEA-U}	-5.58	-3.52	2.05	Y^{G-4}_{BEA-U} and $Y^{S-4}_{BLS-I-P}$	-0.08	0.994
	$Y^{S-4}_{BLS-I-P}$	-5.74	-3.60	2.13			
2771 Greeting Cards	Y^{G-4}_{BEA-U}	-0.54	1.05	1.58	Y^{G-4}_{BEA-U} and $Y^{S-4}_{BLS-I-P}$	-0.43	0.269
	$Y^{S-4}_{BLS-I-P}$	-1.14	0.88	2.02			
2782 Blankbooks, Looseleaf Binders and Devices	Y^{G-4}_{BEA-U}	2.42	-1.52	-3.94	Y^{G-4}_{BEA-U} and $Y^{S-4}_{BLS-I-P}$	-0.08	0.993
	$Y^{S-4}_{BLS-I-P}$	2.22	-1.64	-3.86			
2789 Bookbinding and Related Work	Y^{G-4}_{BEA-U}	-0.03	4.89	4.92	Y^{G-4}_{BEA-U} and $Y^{S-4}_{BLS-I-P}$	0.44	0.994
	$Y^{S-4}_{BLS-I-P}$	0.06	4.54	4.48			
2791 Typesetting	Y^{G-4}_{BEA-U}	-4.85	4.48	9.32	Y^{G-4}_{BEA-U} and $Y^{S-4}_{BLS-I-P}$	-0.01	0.999
	$Y^{S-4}_{BLS-I-P}$	-4.95	4.39	9.34			
2796 Platemaking and Related Services	Y^{G-4}_{BEA-U}	3.03	-6.39	-9.42	Y^{G-4}_{BEA-U} and $Y^{S-4}_{BLS-I-P}$	-0.25	0.999
	$Y^{S-4}_{BLS-I-P}$	3.03	-6.15	-9.18			
SIC 3-Digit Industries in Major Group 29, Petroleum Refining and Related Industries							
291 Petroleum Refining	Y^{G-3}_{BEA-U}	0.63	1.20	0.57	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$	0.15	-0.130
	$Y^{S-3}_{BLS-I-P}$	1.15	1.57	0.42			
295, Asphalt Paving and Roofing Materials	Y^{G-3}_{BEA-U}	1.95	2.96	1.01	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$	0.10	0.997
	$Y^{S-3}_{BLS-I-P}$	1.96	2.87	0.91			
299, Miscellaneous Products of Petroleum and Coal	Y^{G-3}_{BEA-U}	1.11	0.69	-0.43	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$	-0.06	0.984
	$Y^{S-3}_{BLS-I-P}$	0.94	0.58	-0.36			
SIC 3-Digit Industries in Major Group 31, Leather and Leather Products							
311, Leather Tanning and Finishing	Y^{G-3}_{BEA-U}	4.22	0.13	-4.09	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-U}$	-2.33	0.984
	$Y^{S-3}_{BLS-I-U}$	3.41	1.65	-1.76			
313, Boot and Shoe Cut Stock and Findings	Y^{G-3}_{BEA-U}	-8.30	-8.63	-0.33	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-U}$	-8.77	0.611
	$Y^{S-3}_{BLS-I-U}$	-8.14	0.30	8.44			

Table A4. Comparison of Real Output Series: Selected SIC 3- and 4-Digit Industries

SIC 4-Digit Industry	Output Series	Average Annual Growth Rate (1990-95) (1)	Average Annual Growth Rate (1995-00) (2)	Acceleration (2) - (1)	Output Series Comparisons	Difference in Acceleration	Correlation Coefficient
314, Footwear, Except Rubber	$Y^{G\text{-}3}_{BEA\text{-}U}$	-3.28	-5.49	-2.21	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	1.24	0.984
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	-3.62	-7.07	-3.45			
315, Leather Gloves and Mittens	$Y^{G\text{-}3}_{BEA\text{-}U}$	-7.49	5.54	13.03	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}U}$	-0.63	0.992
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}U}$	-7.95	5.71	13.66			
316, Luggage	$Y^{G\text{-}3}_{BEA\text{-}U}$	-4.50	5.53	10.03	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}U}$	1.28	0.971
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}U}$	-4.00	4.75	8.75			
317, Handbags and Other Leather Goods	$Y^{G\text{-}3}_{BEA\text{-}U}$	-7.35	-1.27	6.08	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}U}$	-0.41	0.996
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}U}$	-7.40	-0.91	6.49			
319, Leather Goods, nec	$Y^{G\text{-}3}_{BEA\text{-}U}$	-8.75	7.86	16.62	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}U}$	0.86	0.994
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}U}$	-8.63	7.13	15.75			
SIC 3-Digit Industries in Major Group 35, Industrial and Commercial Machinery and Computer Equipment							
351, Engines and Turbines	$Y^{G\text{-}3}_{BEA\text{-}U}$	3.62	4.41	0.78	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	-0.94	0.955
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	3.13	4.86	1.73			
352, Farm and Garden Machinery and Equipment	$Y^{G\text{-}3}_{BEA\text{-}U}$	2.14	-0.85	-2.99	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	0.00	0.993
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	2.13	-0.87	-3.00			
353, Construction, Mining, and Materials Handling	$Y^{G\text{-}3}_{BEA\text{-}U}$	2.49	3.75	1.26	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	0.16	0.991
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	2.73	3.83	1.10			
354, Metalworking Machinery and Equipment	$Y^{G\text{-}3}_{BEA\text{-}U}$	3.41	1.46	-1.95	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	0.69	0.991
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	3.75	1.11	-2.64			
355, Special Industry Machinery, Except Metalworking	$Y^{G\text{-}3}_{BEA\text{-}U}$	5.83	5.39	-0.43	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	0.76	0.994
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	6.31	5.11	-1.20			
356, General Industrial Machinery and Equipment	$Y^{G\text{-}3}_{BEA\text{-}U}$	2.36	1.29	-1.07	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	0.18	0.993
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	2.36	1.11	-1.25			
357, Computer and Office Equipment	$Y^{G\text{-}3}_{BEA\text{-}U}$	21.89	32.38	10.48	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	-2.87	0.990
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	22.55	35.91	13.35			
358, Refrigeration and Service Industry Machinery	$Y^{G\text{-}3}_{BEA\text{-}U}$	5.10	2.61	-2.49	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	0.09	0.994
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	5.31	2.72	-2.59			
359, Miscellaneous Industrial and Commercial	$Y^{G\text{-}3}_{BEA\text{-}U}$	6.80	2.56	-4.24	$Y^{G\text{-}3}_{BEA\text{-}U}$ and $Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	0.00	0.995
	$Y^{S\text{-}3}_{BLS\text{-}I\text{-}P}$	6.73	2.49	-4.24			

Table A4. Comparison of Real Output Series: Selected SIC 3- and 4-Digit Industries

SIC 4-Digit Industry	Output Series	Average Annual Growth Rate (1990-95) (1)	Average Annual Growth Rate (1995-00) (2)	Acceleration (2) - (1)	Output Series Comparisons	Difference in Acceleration	Correlation Coefficient
SIC 3-Digit Industries in Major Group 38, Measuring, Analyzing, and Controlling Instruments: Photographic, Medical and Optical Goods: Watches and Clocks							
381, Search, Detection, Navigation, Guidance, Aeronautical, and Nautical	Y^{G-3}_{BEA-U}	-5.25	-0.11	5.14	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$	-1.09	0.973
	$Y^{S-3}_{BLS-I-P}$	-5.52	0.71	6.23			
382, Laboratory Apparatus and Analytical, Optical	Y^{G-3}_{BEA-U}	4.29	2.74	-1.55	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$	0.26	0.990
	$Y^{S-3}_{BLS-I-P}$	4.32	2.52	-1.81			
384, Surgical Medical and Dental Instruments and	Y^{G-3}_{BEA-U}	3.97	6.98	3.00	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$	0.12	0.987
	$Y^{S-3}_{BLS-I-P}$	3.85	6.73	2.88			
385, Opthalmic Goods	Y^{G-3}_{BEA-U}	3.90	7.73	3.84	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$	-0.21	0.972
	$Y^{S-3}_{BLS-I-P}$	3.45	7.50	4.05			
386, Photographic Equipment and Supplies	Y^{G-3}_{BEA-U}	0.72	0.75	0.03	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$	-0.52	0.920
	$Y^{S-3}_{BLS-I-P}$	0.84	1.39	0.55			
387, Watches, Clocks, Clockwork Operated Devices	Y^{G-3}_{BEA-U}	-9.33	5.51	14.85	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-U}$	5.61	0.880
	$Y^{S-3}_{BLS-I-U}$	-6.57	2.67	9.24			
SIC 3-Digit Industries in Major Group 48, Communications							
481, Telephone Communications	*Only a single series (YS-3BLS-I-P) is available.*						
482 Telegraph and Other Message Communications	*No BEA or BLS output series available.*						
483 Radio and Television Broadcasting Stations	Y^{G-3}_{BEA-U}	0.08	-0.06	-0.14	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$	-1.21	0.733
	$Y^{S-3}_{BLS-I-P}$	1.13	2.19	1.06			
484 Cable and Other Pay Television Stations	Y^{G-3}_{BEA-U}	5.38	8.93	3.55	Y^{G-3}_{BEA-U} and $Y^{S-3}_{BLS-I-P}$	-1.70	0.470
	$Y^{S-3}_{BLS-I-P}$	2.96	8.21	5.25			
489, Communications Services, nec	*No BEA or BLS output series available.*						

DATA APPENDIX

.

BLS Time Series

100Private Business:

MFP Table PB1a, PB1b, and PB4b

	Time series associated with Table 1 (in billions of dollars)			Index time series associated with Table 3 (1996=100.0)				
	Line 9b	Line 9b-ii	Line 9b-i					
Year	Current Dollar Output	Labor Compensation	Cost of Capital Services	Real Output	Labor Input	Capital Services	Combined Input Quantity	Multifactor Productivity
1948	225.5	142.4	68.8	18.6	51.1	17.2	36.1	51.6
1949	218.3	137.0	66.2	18.6	49.4	17.6	35.6	52.2
1950	243.0	149.9	76.7	20.5	50.3	18.3	36.5	56.0
1951	276.6	171.1	87.7	21.8	52.1	19.3	38.0	57.3
1952	288.6	181.3	87.5	22.2	52.2	19.9	38.5	57.8
1953	303.9	194.4	88.2	23.2	53.2	20.5	39.3	59.1
1954	301.9	193.2	87.7	23.0	51.7	20.9	38.8	59.2
1955	331.4	206.5	102.2	24.9	53.7	21.6	40.2	62.0
1956	352.1	223.6	104.2	25.4	54.6	22.3	41.1	61.7
1957	367.7	234.6	108.3	25.8	53.9	23.0	41.1	62.6
1958	366.3	233.1	107.9	25.3	51.6	23.4	40.1	62.9
1959	400.3	251.7	121.0	27.1	53.7	23.9	41.6	65.1
1960	413.6	262.4	121.0	27.5	54.0	24.6	42.1	65.5
1961	424.6	268.8	125.2	28.1	53.3	25.1	42.0	66.9
1962	455.6	286.9	136.8	29.9	54.8	25.8	43.2	69.3
1963	479.9	299.5	147.1	31.3	55.2	26.7	43.8	71.4
1964	514.4	321.8	156.9	33.3	56.2	27.6	44.9	74.2
1965	559.0	346.3	174.7	35.6	58.0	28.9	46.5	76.6
1966	608.2	381.3	187.5	38.1	59.5	30.5	48.2	78.9
1967	638.4	403.3	193.0	38.8	59.4	32.3	49.1	79.0
1968	697.1	440.9	209.0	40.7	60.3	33.7	50.3	81.1
1969	752.3	483.2	217.4	42.0	62.1	35.5	52.1	80.6
1970	780.9	508.5	216.5	42.0	61.0	37.1	52.2	80.5
1971	842.0	539.1	240.7	43.6	60.5	38.7	52.5	83.0
1972	931.2	594.3	272.0	46.5	62.6	40.3	54.5	85.5
1973	1050.8	673.6	306.7	49.8	64.8	42.6	56.8	87.8
1974	1132.1	735.5	319.5	49.0	65.2	44.9	57.9	84.6
1975	1222.0	771.9	368.9	48.5	62.4	46.6	56.8	85.4
1976	1367.9	868.2	414.0	51.9	64.2	48.1	58.5	88.6
1977	1540.7	972.4	467.4	54.8	66.8	50.0	60.9	90.0
1978	1757.3	1115.3	524.7	58.2	70.2	52.2	63.9	91.2
1979	1959.2	1262.4	568.5	60.2	72.4	54.8	66.2	90.8
1980	2117.8	1374.0	602.1	59.4	71.9	57.6	67.0	88.8
1981	2382.8	1510.8	705.1	61.0	73.0	60.5	68.7	88.9
1982	2468.6	1576.6	739.9	59.3	71.7	63.0	68.8	86.2
1983	2643.6	1673.4	799.1	62.5	73.4	65.0	70.5	88.6
1984	2992.3	1867.1	934.5	68.1	77.7	68.1	74.4	91.5
1985	3205.2	2010.8	983.8	71.0	79.6	71.3	76.8	92.4
1986	3344.3	2134.1	990.0	73.6	80.4	74.4	78.4	93.9
1987	3591.9	2274.7	1088.3	76.3	83.1	76.9	81.0	94.2

1988	3906.9	2461.9	1212.6	79.6	86.3	79.2	83.9	94.8
1989	4132.8	2606.3	1273.6	82.4	88.8	81.6	86.4	95.3
1990	4329.9	2750.1	1317.4	83.6	89.4	83.8	87.5	95.5
1991	4432.0	2800.7	1328.8	82.6	88.3	85.7	87.4	94.5
1992	4661.3	2956.9	1381.2	85.7	89.3	87.5	88.7	96.7
1993	4897.5	3101.3	1451.3	88.5	91.8	89.7	91.1	97.1
1994	5239.6	3265.5	1602.6	92.8	95.6	92.5	94.6	98.2
1995	5541.7	3430.6	1700.8	95.8	98.0	96.0	97.3	98.4
1996	5874.5	3600.7	1839.8	100.0	100.0	100.0	100.0	100.0
1997	6299.3	3830.0	1973.2	105.2	103.5	104.9	104.0	101.2
1998	6729.2	4149.7	2043.6	110.5	106.1	111.3	107.9	102.5
1999	7121.6	4446.1	2154.8	115.7	109.0	117.9	111.9	103.4
2000	7624.2	4819.4	2222.6	120.4	110.1	124.5	114.7	105.0
2001	7748.8	4899.9	2255.5	120.2	109.5	129.6	115.7	103.9

Private Nonfarm Business:

MFP Table NFB1a, NFB1b, and NFB4b

	Time series associated with Table 1 (in billions of dollars)			Index time series associated with Table 3 (1996=100.0)				
	Line 13b	Line 13b-ii	Line 13b-i					
Year	Current Dollar Output	Labor Compensation	Cost of Capital Services	Real Output	Labor Input	Capital Services	Combined Input Quantity	Multifactor Productivity
1948	203.2	128.6	60.2	18.0	44.1	15.2	31.8	56.4
1949	200.6	126.3	59.1	17.9	42.2	15.6	31.2	57.6
1950	224.1	139.0	68.6	19.7	43.7	16.2	32.3	61.1
1951	254.7	159.6	77.2	21.3	45.8	17.1	33.9	62.7
1952	267.6	170.7	77.0	21.8	46.6	17.7	34.7	62.7
1953	285.0	184.9	78.6	22.7	48.1	18.2	35.8	63.5
1954	283.5	183.9	78.5	22.4	46.7	18.7	35.3	63.5
1955	314.0	198.4	92.7	24.4	48.6	19.3	36.7	66.5
1956	334.8	215.6	94.5	24.9	49.9	20.1	37.8	65.9
1957	350.6	226.7	98.2	25.4	49.8	20.7	38.1	66.6
1958	347.2	224.6	96.4	24.9	47.7	21.1	37.2	66.8
1959	382.8	243.9	110.7	26.7	49.9	21.6	38.7	69.1
1960	395.2	254.7	109.5	27.2	50.1	22.3	39.2	69.4
1961	405.9	260.5	113.4	27.7	49.9	22.9	39.3	70.5
1962	436.9	278.2	125.1	29.6	51.5	23.6	40.6	73.0
1963	461.0	291.2	135.0	31.0	52.1	24.4	41.4	75.0
1964	496.6	313.5	145.6	33.1	53.4	25.4	42.6	77.8
1965	538.7	336.9	161.7	35.5	55.4	26.6	44.3	80.0
1966	587.0	371.2	173.5	38.0	57.2	28.3	46.2	82.3
1967	618.0	394.2	178.9	38.7	57.1	30.0	47.0	82.2
1968	676.2	431.6	194.4	40.8	58.2	31.4	48.3	84.4
1969	729.1	473.3	200.8	42.0	60.1	33.1	50.2	83.6
1970	756.8	497.9	199.8	41.9	59.3	34.8	50.5	83.1
1971	816.2	528.4	222.9	43.6	58.9	36.3	50.9	85.6
1972	901.0	582.5	250.1	46.6	60.9	38.1	52.8	88.2
1973	1003.6	657.2	273.4	50.0	63.3	40.3	55.2	90.7
1974	1087.4	720.5	289.3	49.2	63.7	42.6	56.3	87.4
1975	1175.9	756.4	337.6	48.4	60.9	44.3	55.2	87.6
1976	1324.3	853.0	384.9	51.9	62.8	45.9	57.0	91.1
1977	1496.5	957.4	436.5	54.9	65.4	47.7	59.3	92.4
1978	1705.7	1099.4	486.6	58.4	68.8	49.9	62.3	93.7
1979	1898.2	1244.3	524.5	60.3	71.1	52.6	64.8	93.1
1980	2065.3	1357.8	564.8	59.6	70.7	55.4	65.5	91.0
1981	2316.8	1493.6	654.8	60.8	71.7	58.4	67.2	90.5
1982	2407.4	1559.2	693.9	59.0	70.6	61.0	67.4	87.5
1983	2598.4	1658.5	761.3	62.8	72.3	63.3	69.3	90.6
1984	2927.7	1849.9	880.1	68.1	76.7	66.4	73.3	93.0
1985	3141.9	1993.9	931.3	70.8	78.8	69.8	75.8	93.4
1986	3285.2	2117.6	937.9	73.5	79.8	73.0	77.6	94.8
1987	3530.4	2257.1	1030.9	76.2	82.5	75.8	80.3	94.9
1988	3846.7	2442.2	1160.5	79.7	85.9	78.3	83.4	95.6

1989	4060.3	2584.3	1213.9	82.4	88.5	80.8	86.0	95.8
1990	4254.3	2725.4	1259.0	83.5	89.2	83.2	87.2	95.8
1991	4362.8	2777.3	1276.2	82.5	87.9	85.1	87.0	94.8
1992	4584.9	2932.7	1321.4	85.5	89.0	87.0	88.4	96.7
1993	4828.3	3076.1	1396.0	88.4	91.8	89.4	91.0	97.2
1994	5160.3	3237.3	1545.1	92.6	95.4	92.2	94.3	98.2
1995	5473.1	3404.0	1652.8	95.8	97.8	95.8	97.2	98.6
1996	5787.1	3570.8	1776.1	100.0	100.0	100.0	100.0	100.0
1997	6216.1	3800.4	1913.2	105.1	103.6	105.1	104.1	101.0
1998	6654.0	4120.6	1986.5	110.5	106.4	111.7	108.1	102.2
1999	7052.0	4415.7	2097.3	115.7	109.5	118.5	112.4	102.9
2000	7552.3	4789.7	2161.0	120.2	110.6	125.4	115.2	104.4
2001	7674.3	4866.4	2197.0	120.1	110.1	130.5	116.3	103.3

BEA Nominal Time Series Associated with Table 1
(in billions of dollars)

Table 1 line	line 1	line 2	line 2a	line 2b	line 3	line 4	line 6	line 7
			NIPA Table 1.7			NIPA Table 8.21		
Year	line 1 Gross Domestic Product	line 7 Households & Institutions	line 8 Private Households	line 9 Nonprofit Institutions Serving Individuals	line 10 General Government	line 2 Gross Domestic Business Product	line 172 Owner-Occupied Housing	line 173 Rental Value of Nonresidential Assets Owned & Used by Nonprofit Institutions Serving Individuals
1948	269.6	5.6	2.4	3.2	27.3	236.6	8.4	0.8
1949	267.7	5.9	2.4	3.6	28.4	233.3	9.4	0.8
1950	294.3	6.5	2.6	3.9	28.7	259.1	10.6	0.9
1951	339.5	6.9	2.7	4.3	35.8	296.8	12.2	1.0
1952	358.6	7.2	2.6	4.6	40.5	310.9	14.0	1.1
1953	379.9	7.8	2.7	5.1	42.2	329.9	15.9	1.1
1954	381.1	8.1	2.6	5.5	43.5	329.4	17.7	1.2
1955	415.2	9.1	3.1	6.1	45.9	360.2	19.3	1.3
1956	438.0	9.9	3.3	6.6	49.2	378.9	21.0	1.4
1957	461.5	10.6	3.3	7.3	52.6	398.3	22.8	1.6
1958	467.9	11.5	3.5	8.0	55.9	400.5	24.8	1.6
1959	507.4	12.4	3.6	8.9	58.4	436.6	26.9	1.6
1960	527.4	13.9	3.8	10.1	62.1	451.3	29.2	1.8
1961	545.7	14.5	3.7	10.7	66.1	465.1	31.2	1.9
1962	586.5	15.6	3.8	11.8	70.9	500.0	33.6	2.0
1963	618.7	16.7	3.8	12.8	75.7	526.3	35.6	2.2
1964	664.4	17.9	3.9	14.0	81.3	565.2	37.6	2.4
1965	720.1	19.3	4.0	15.3	86.8	613.9	40.1	2.6
1966	789.3	21.3	4.0	17.2	97.0	671.0	42.8	2.9
1967	834.1	23.4	4.2	19.2	107.3	703.4	45.6	3.2
1968	911.5	26.1	4.4	21.7	119.3	766.1	48.4	3.6
1969	985.3	29.5	4.4	25.0	130.5	825.4	52.3	4.0
1970	1039.7	32.4	4.5	27.9	144.2	863.1	56.1	4.5
1971	1128.6	35.6	4.6	31.0	157.3	935.7	61.5	5.0
1972	1240.4	38.9	4.6	34.3	171.5	1030.0	66.7	5.5
1973	1385.5	43.0	4.8	38.2	185.7	1156.8	72.8	6.3
1974	1501.0	47.1	4.6	42.6	203.4	1250.5	79.8	7.3
1975	1635.2	52.0	4.6	47.3	226.4	1356.8	86.5	8.4
1976	1823.9	57.1	5.4	51.6	245.3	1521.6	94.5	9.1
1977	2031.4	62.4	5.9	56.4	266.2	1702.8	103.7	9.9
1978	2295.9	69.7	6.5	63.2	288.9	1937.3	117.5	11.2
1979	2566.4	77.3	6.4	70.9	314.2	2174.9	134.6	12.7
1980	2795.6	87.1	6.1	81.0	349.7	2358.8	157.4	14.6
1981	3131.3	97.6	6.2	91.4	386.5	2647.3	179.6	16.8
1982	3259.2	108.2	6.3	102.0	421.2	2729.8	196.5	19.0
1983	3534.9	119.2	6.3	112.9	447.7	2968.1	209.2	20.7
1984	3932.7	131.2	7.3	123.9	487.7	3313.9	228.1	22.2
1985	4213.0	141.0	7.3	133.6	525.3	3546.8	246.0	24.1

1986	4452.9	153.7	7.7	146.0	558.2	3740.9	263.3	25.7
1987	4742.5	173.3	7.7	165.6	593.1	3976.0	284.7	28.1
1988	5108.3	195.1	8.3	186.8	632.0	4281.2	311.3	30.8
1989	5489.1	214.6	8.9	205.7	673.6	4600.9	338.1	33.6
1990	5803.2	237.9	9.4	228.6	723.3	4842.0	362.2	36.1
1991	5986.2	257.5	9.1	248.4	766.3	4962.4	381.0	38.9
1992	6318.9	279.5	10.1	269.4	797.3	5242.1	398.2	41.8
1993	6642.3	297.0	10.7	286.3	827.3	5518.0	413.8	45.4
1994	7054.3	313.3	11.1	302.2	854.5	5886.6	439.7	45.7
1995	7400.5	330.3	11.9	318.4	880.1	6190.1	464.4	48.1
1996	7813.2	348.6	12.0	336.5	908.7	6556.0	487.1	49.8
1997	8318.4	363.2	12.0	351.2	944.6	7010.5	509.1	52.2
1998	8781.5	383.8	14.0	369.8	979.8	7418.0	541.0	55.2
1999	9274.3	403.1	12.7	390.4	1023.5	7847.7	581.9	55.2
2000	9824.6	431.1	13.6	417.5	1082.1	8311.4	621.5	58.7
2001	10082.2	459.6	11.9	447.7	1139.8	8482.7	648.5	61.2

Table 1 line	line 8a	line 8b	line 10	line 11	line 12
	GDP by Industry*		NIPA Table 1.7	NIPA Table 8.21	
Year	line 80	line 83	line 6 Farms	line 114 Farm Space Rent for Owner-Occupied Housing	line 117 Farm Intermediate Inputs for Owner-Occupied Housing
1948	1.4	1.4	23.3	1.4	0.4
1949	1.5	1.6	18.7	1.3	0.3
1950	1.3	1.7	19.9	1.4	0.3
1951	1.3	1.9	22.9	1.5	0.4
1952	2.0	2.1	22.1	1.6	0.4
1953	2.1	2.3	20.1	1.6	0.4
1954	2.4	2.4	19.5	1.6	0.4
1955	2.5	2.7	18.6	1.6	0.4
1956	2.4	2.9	18.4	1.6	0.4
1957	2.7	3.0	18.3	1.7	0.4
1958	2.9	3.1	20.5	1.7	0.4
1959	3.2	3.6	18.9	1.8	0.5
1960	3.4	4.0	19.8	1.9	0.5
1961	3.4	4.1	20.1	2.0	0.6
1962	3.6	4.5	20.2	2.0	0.6
1963	4.2	4.9	20.4	2.1	0.6
1964	4.4	5.2	19.3	2.2	0.7
1965	4.7	5.5	21.9	2.3	0.7
1966	4.9	5.8	22.9	2.4	0.7
1967	5.3	6.0	22.2	2.5	0.8
1968	6.2	6.5	22.7	2.6	0.7
1969	6.7	7.1	25.2	2.8	0.8
1970	7.1	7.7	26.2	3.0	0.8
1971	7.7	8.2	28.1	3.2	0.9
1972	9.0	8.9	32.6	3.4	1.0
1973	9.0	9.9	49.8	3.5	1.0
1974	10.8	10.5	47.4	3.6	1.0
1975	10.8	11.5	48.8	3.7	1.0
1976	13.5	12.0	46.4	3.8	1.0
1977	14.1	12.7	47.2	4.0	1.0
1978	16.2	14.0	54.7	4.3	1.1
1979	17.9	14.7	64.5	4.5	1.1
1980	19.4	15.7	56.1	4.7	1.1
1981	24.0	16.6	69.9	4.9	1.0
1982	25.0	18.3	65.1	4.7	0.8
1983	26.3	21.3	49.2	4.7	0.8
1984	27.8	25.0	68.5	4.7	0.8
1985	31.1	28.7	67.1	4.6	0.8
1986	32.5	31.3	63.0	4.5	0.7

1987	34.5	33.5	65.1	4.6	1.0
1988	37.4	37.0	63.8	4.5	0.8
1989	39.5	40.5	76.2	4.6	0.9
1990	40.4	42.8	79.6	4.8	0.8
1991	46.5	44.3	73.2	4.9	0.9
1992	51.1	46.0	80.5	5.0	1.0
1993	49.2	48.2	73.6	5.2	0.9
1994	52.2	50.9	83.6	5.5	1.1
1995	55.5	53.9	73.2	5.6	1.0
1996	54.9	56.9	92.2	5.8	1.0
1997	59.2	60.9	88.3	6.1	1.0
1998	61.3	62.2	80.6	6.4	1.0
1999	62.2	65.6	75.2	6.8	1.2
2000	66.1	69.4	77.8	7.2	1.3
2001	63.4	78.1	80.6	7.6	1.4

* The GDP by Industry data is from http://www.bea.gov/bea/dn2/gpo.htm, the zip files Gpo72sic.xls and Gpo87sic.xls.