

## **U.S. 60-industry data 1977-2004, Sources and methods**

This file documents the construction of U.S. industry output and employment (60-industry) data for the period 1977-2004. First a number of general principles are outlined that have been used in constructing the output and employment data and next the source material and estimation procedures per variable is described and discussed. Finally, aggregate labour productivity growth trends are compared to some alternative sources to evaluate the consistency of the database.

The main source for all variables in the 60-industry database (except average hours worked) is the GDP by Industry accounts from the Bureau of Economic Analysis (BEA). Specifically, the release of December 2005 of the data for the period 1998-2004 is used in combination with the release of December 2005 of historic data for the period 1947-1986 and the data for the period 1987-1997, released in November 2004.<sup>1</sup> The industry data in each of these releases is organized according to the NAICS 1997 classification system and is consistent with the 2003 Comprehensive Revision of the National Income and Product Accounts (NIPA).<sup>2</sup>

The three releases also delineate three distinct periods in terms of data quality. For the period 1998-2004, all source material used by the BEA is on a NAICS basis and there is an underlying set of consistent Supply and Use tables.<sup>3</sup> For 1987-1997, the original source material is on the old 1987 SIC basis, but of sufficient detail for the BEA to estimate consistent gross output, intermediate inputs and value added accounts.<sup>4</sup> For 1977-1986, the source material, on 1972 SIC basis, is still detailed enough to provide series of value added for 65 industries, but no gross output series in either current or constant prices. The 1947-1976 is not incorporated in the database or discussed here as the number of industries in the BEA dataset drops to 22. In the discussion of the data construction by variable, the three periods will often be distinguished.

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<sup>1</sup> The corresponding articles in the *Survey of Current Business* are, respectively, Smith and Lum (2005), Yuskavage and Fahim-Nader (2005) and Yuskavage and Pho (2004).

<sup>2</sup> See Seskin and Larkins (2004).

<sup>3</sup> See Moyer, Planting, Vern and Kish (2004).

<sup>4</sup> Only overall intermediate input use is available, instead of the more detailed annual Use tables available from the later period.

The guiding principle in the construction of the data is that for additive variables, such as value added at current prices or the number of persons engaged, the industries should add up to BEA control totals. So this means that summing value added across all industries gives GDP at current prices, but also that value added of all agricultural industries adds up to the BEA total for that industry group. For growth rates of prices and quantities, such consistency cannot easily be enforced, but obviously, any deviations from BEA totals should be small.

However, there are three reasons why the consistency for the additive variables cannot easily be demonstrated from the final tables. The first reason is that ‘Taxes on production and imports, less subsidies’ are subtracted from gross output and value added to make the data more comparable to the output series at basic prices that are available for other countries. This does not achieve perfect comparability, because this variable not just covers indirect taxes on products, but also taxes on production. The basic prices concept would exclude the former, but include the latter type of taxes (less subsidies), so in the U.S. case, it is more appropriate to refer to the resulting series as gross output and value added at factor cost.<sup>5</sup>

The second reason is that for a considerable number of the 56 industries<sup>6</sup> in the 60-industry database list (60IND), there is no easy concordance to one or more of the 65 industries of the GDP by Industry list (BEA). In database terminology, there is a many-to-many concordance between the 60IND and the BEA list. For example, the printing and publishing industry (ISIC 22) covers Printing and Related Support Activities (NAICS 323), Manufacturing and Reproducing Magnetic and Optical Media (NAICS 3346) and Newspaper, Periodical, Book, and Database Publishers (NAICS 5111), each of which is (part of) a separate industry in the BEA list. So in the BEA list, there is only Publishing industries (includes software) (NAICS 511), part of which should be allocated to printing and publishing (ISIC 22) and part of which should be allocated to Computer and related activities (ISIC 72). To resolve this many-to-many concordance, an auxiliary (AUX) list of 92 industries is set up, which has a one-to-many concordance to both the 60IND and

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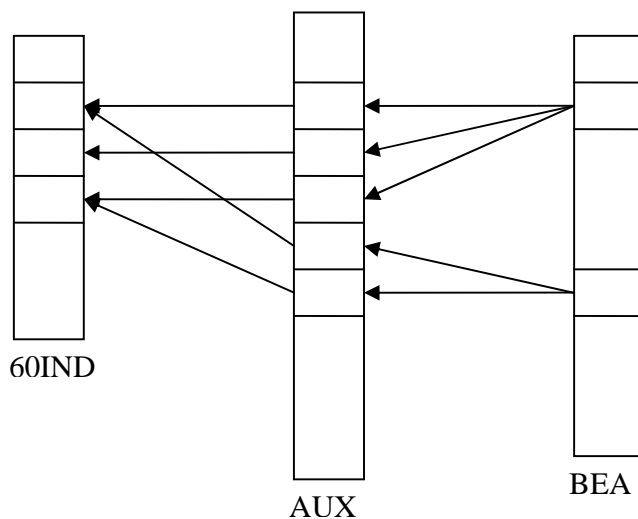
<sup>5</sup> The BEA publishes aggregate data distinguishing between taxes on products and on production. Taxes on products represent about 55 percent of total taxes in 2004, but no breakdown by industry is available.

<sup>6</sup> See Table 1 for a list of industries with corresponding ISIC codes. No data is available for industry 57, Extra-territorial organizations and bodies (ISIC99) for any of the countries.

the BEA list. Figure 1 illustrates this graphically, while Table 2 gives a complete list of the AUX list and the corresponding NAICS code and 60IND number. As a result of this concordance process, consistency with the BEA control totals can only be demonstrated for all industries with data organized as in the AUX list.

The final reason why the final series for value added and employment cannot be easily compared to BEA series is an adjustment involving the new Management of Companies industry (NAICS 55). For the most part, this industry covers the output and employment of firm headquarters. Under the ISIC classification (and the previous U.S. SIC87 classification), such activities are included in the industries to which they provide headquarters services. So for example, the headquarters of Wal-Mart would be included as part of retail trade under ISIC but as part of management of companies under NAICS. The 1997 Benchmark Use table and 1998-2004 Annual Use tables are used to determine intermediate deliveries from management of companies to all other industries. The output and employment of the management of companies industry is then allocated to other industries based on these deliveries.<sup>7</sup>

**Figure 1 Concordances between the 60IND and the BEA industry lists through an auxiliary (AUX) list**



<sup>7</sup> Not all output and employment is redistributed. Part of the services of this industry is also exported. Furthermore, gross output is almost fully removed, since the reallocation is basically the consolidation of an industry, with intermediate inputs and corresponding gross output cancelling out. Even though the price of headquarters' services is used by the BEA in estimating double deflated value added prices, an adjustment to the BEA results is omitted here because this caused a larger discrepancy between aggregate growth of value added at constant prices based on our data and the corresponding BEA aggregate.

As the preceding discussion illustrates, a crucial part of the data construction is the mapping of NAICS industries into the 60IND list. This mapping was made in a number of steps. The starting point is the official concordance between NAICS and ISIC.<sup>8</sup> This official concordance is first adjusted so that each 6-digit NAICS industry is matched to a unique 4-digit ISIC industry. In many cases, 6-digit NAICS industries would need to be split up further for a perfect concordance to ISIC, but the only data available at that level of detail are product shipments in the 1997 Economic Census. This data is used to allocate each 6-digit NAICS industry to the ISIC industry containing the largest share of shipments. The second step is to confront this concordance with the level of detail of the source material since for earlier years and outside manufacturing, 6-digit NAICS data is often not available. Moreover, even if the data is available for one or more variables, it is rarely the case that all variables are available from the same survey such as the Annual Survey of Manufacturers. For more detailed industries, this increases the scope for sampling mismatch between different surveys, i.e. data on output reflecting one set of firms and data on employment another. As a result of this consideration, 5-digit and 6-digit industries were reallocated as little as possible. A reallocation is only made if that 5- or 6-digit industry represents more than 10 percent of either the original or the destination industry.<sup>9</sup> Taken together, this process can best be described as the move from the optimal concordance to a feasible mapping.

After this general overview of the data construction, a discussion of the data sources and methods for each of the variables is in order. Although the 60-industry database does not cover gross output at either current or constant prices, it is a crucial input for some of the other variables. In addition, the regular 60-industry variables are discussed, namely value added at current prices, labour compensation of employees,

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<sup>8</sup> See <http://www.census.gov/epcd/naics/concordances/index.html>. Here, the concordance between NAICS 2002 and ISIC rev. 3.1 is shown as well as the concordance between NAICS 1997 and NAICS 2002. Together, this gives the NAICS 1997 – ISIC rev. 3 concordance (the ISIC rev. 3 to rev. 3.1 concordance is straightforward).

<sup>9</sup> So for example, Ophthalmic Goods mfg (NAICS 339115) is moved from Scientific instruments (ISIC 331) to Other instruments (ISIC 33ex331) because this industry represents 44% of output of Other instruments in 2004. However, Drapery hardware and window blinds and shades (NAICS 33792) is not moved from Miscellaneous manufacturing (ISIC 36-37) to Textiles (ISIC 17) because it only represents 6% of Textiles and 2% of Miscellaneous manufacturing.

growth of the value added deflator, persons engaged, employees and average hours worked per person.

### *Gross output at current prices*

As discussed earlier, the main source of data is BEA GDP by Industry accounts for the period 1987-2004.<sup>10</sup> The variable ‘Taxes on production and imports, less subsidies’ is used to remove all taxes on products and production. For the 1977-1986 period, the 1987 data is extrapolated using BLS Industry output and employment data (BLS EMP).<sup>11</sup> For the period 1998-2004, the BEA publishes detailed Gross output by Industry data, consistent with the GDP by Industry totals. For the period 1977-1997 and a number of industries for 1998-2004, the BLS EMP data is used to distinguish the industries on the AUX list, with the exception of the distinction in wholesale and retail trade between motor vehicle trade and other wholesale and retail. For the 1993-2004 period, NAICS-based data on output (gross margins) is available from the Census Annual Wholesale Trade Survey<sup>12</sup> and the Annual Retail Trade Survey.<sup>13</sup> For the 1977-1992 period, these data are extrapolated using the BEA Gross Output by Industry data for 1977-1997.<sup>14</sup>

### *Value added at current prices*

The basic source of data is value added minus taxes from the BEA GDP by Industry accounts for 1977-2004. For 1977-1986, no NAICS-based data on taxes is available, so the GDP by Industry data on the old SIC basis are used to extrapolate the 1987 share of taxes in value added.<sup>15</sup> Since there is more detailed source material on gross output than on value added, especially outside manufacturing, a complete set of value added/gross output (VA/GO) ratio is estimated. If no information is available about (trends in) the VA/GO ratio of the detailed industries on the AUX list, it is assumed to follow the more

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<sup>10</sup> See [http://www.bea.gov/bea/dn2/gdpbyind\\_data.htm](http://www.bea.gov/bea/dn2/gdpbyind_data.htm).

<sup>11</sup> See <http://www.bls.gov/emp/empind2.htm>. The data release of December 2005, covering the period 1972-2004, is used.

<sup>12</sup> See <http://www.census.gov/svsd/www/whltable.html>; data as available in February 2006 were used, which did not incorporate the results from the 2002 Economic Census yet.

<sup>13</sup> See <http://www.census.gov/svsd/www/artstbl.html>; data as available in February 2006 were used, which did not incorporate the results from the 2002 Economic Census yet.

<sup>14</sup> See [http://www.bea.gov/bea/pn/GDPbyInd\\_GO\\_SIC.xls](http://www.bea.gov/bea/pn/GDPbyInd_GO_SIC.xls).

<sup>15</sup> Those data, on 1972 SIC basis, has been revised to be consistent with the 2003 Comprehensive revision of the NIPAs and can be downloaded at [http://www.bea.gov/bea/pn/GDPbyInd\\_VA\\_SIC.xls](http://www.bea.gov/bea/pn/GDPbyInd_VA_SIC.xls).

aggregate trend from the BEA data. For 1997, the BEA Benchmark Use table provides the VA/GO ratio for almost all AUX industries. The exception is the distinction between motor vehicle and other trade so in that case, the same VA/GO ratio is assumed. For the period 1998-2004, the manufacturing VA/GO ratios for 1997 are extrapolated using data on value added and value of shipments from the 2001 and 2004 Annual Survey of Manufacturers (ASM).<sup>16</sup> The private households industry (ISIC 95) is relatively special in that, by construction, intermediate inputs are zero. The procedure described above can, in general, lead to VA/GO ratios not equal to 1. This equality is enforced later and any value added above or below gross output is distributed to the other community and personal services industry (ISIC 90-93). Another problem is that in the 1977-1986 period, some of the value added estimates exceed gross output. In those cases, gross output is adjusted upward to the average 1987-1997 VA/GO ratio for that industry. Obviously, this adjustment is not ideal, but since value added is the variable which needs to be consistent with BEA data, while gross output data are from a different source (BLS), this adjustment is the least problematic.<sup>17</sup>

### *Labour compensation of employees*

The estimation of labour compensation follows along similar lines as the estimation of value added: the basic source is labour compensation from BEA GDP by Industry and a full set of compensation to gross output (COMP/GO) ratios is estimated. For 1977-1986, no NAICS-based labour compensation is available from the BEA, so a compensation to value added ratio based on the SIC-based GDP by Industry data is used to extrapolate from the 1987 level. The estimates generated this way are adjusted to sum to total economy labour compensation from the SIC-based GDP by Industry data. For 1997, the Benchmark Use table is the main source, extrapolated for the period 1998-2004 for manufacturing industries using ASM data on total labour compensation and value of

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<sup>16</sup> See <http://www.census.gov/mcd/asmhome.html>. The 2001 ASM covers the years 1997-2001 and is only available in hardcopy. The 2004 ASM data covers 2002-2004 and data can be downloaded through American FactFinder, <http://factfinder.census.gov/>. The value added data from the ASM is not consistent with the BEA data as it still includes intermediate services purchases. Likewise, value of shipments is not consistent with gross output as it does not correct for changes in inventories. Therefore, trends in this proxy-VA/GO ratio are applied to the (consistent) Use table-based estimates.

<sup>17</sup> This problem would be avoided if a fully consistent set of input-output accounts were estimated, but that is currently beyond the scope of this database.

shipments. For non-manufacturing industries, estimates for this period are based on the BLS Current Employment Statistics (CES).<sup>18</sup> The variable on Average weekly earnings of production and non-supervisory workers is combined with the All employees variable to get an estimate of total earnings. Just as with the ASM data, the COMP/GO ratios calculated in this way are applied to the Use table-based ratios, which are consistent with BEA concepts. As with other variables, in the final estimation stage, the estimates of labour compensation are normalized to BEA totals. For the private households industry (ISIC 95), the same procedure is followed as for value added, since all output consists of labour compensation (by construction).

### *Employees*

For the 1998-2004 period, the Full-time and part-time employees variable in the GDP by Industry dataset is used as the main source. Detailed breakdowns for manufacturing industries are based on the Employees variable in the ASM and the non-manufacturing breakdowns are based on the CES. For the 1977-1997 period, the main data source is the Wage and salary jobs variable in the BLS EMP dataset. Missing industries in that dataset are filled using CES data. These estimates are used as the trend for 1977-1997, linked to the 1998 levels. In each year of the 1977-1997 period, the estimates are normalized to sum to the total economy BEA figures from the SIC-based GDP by Industry dataset.

### *Persons engaged*

The persons engaged variable in the 60-industry database is equal to the number of employees plus self-employed workers. Due to inconsistencies between data sources, estimating the total number of persons engaged independently from the number of employees can potentially lead to estimates of persons engaged that are smaller than the estimates of the number of employees. Therefore, the number of self-employed workers is estimated and added to the earlier employee estimates. For 1998-2004, the main source is the number of self-employed from the GDP by Industry dataset. This number is calculated indirectly by subtracting the variable Full-time equivalent employees from Persons engaged in production. Information about the number of self-employed is less

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<sup>18</sup> See [www.bls.gov/ces](http://www.bls.gov/ces). The data release of April 2005 is used.

complete than data about employees, so estimates are made of the self-employed to employee ratio. If no data for detailed industries is available, a more aggregate ratio is applied. For most industries, the BLS EMP dataset contains data in the Self-employed and unpaid family worker jobs variable. For 1977-1997, the BLS EMP dataset represents the only NAICS-based source for data on the number of self-employed, so this source is used to calculate the self-employed to employee ratio for those years. In the final stage, the estimates are normalized to the BEA total economy figures from the SIC-based GDP by Industry dataset.

#### *Average hours worked by all persons engaged*

This is the only variable which is not benchmarked to a BEA variable. The reason is that data on hours worked is not part of the GDP by Industry dataset. NIPA table 6.9 does provide data on total hours worked by employees, but only at a relatively aggregate level. Moreover, the basic data is readily available from the CES. The estimation procedure is in two stages, comparable to that of the number of persons engaged. First, the average hours worked by employees is estimated using the BLS EMP dataset, which provides matching data on wage and salary jobs and total hours worked. The resulting data on average hours worked by employees are supplemented by data on average weekly hours of production and supervisory workers from the CES for some detailed industries for the period 1998-2004. For earlier years, the average number of hours worked of more aggregate industries is applied to detailed industries. Proceeding along the same lines, average hours by self-employed are calculated based on the BLS EMP dataset and here, no supplemental data is available. In the final stage, the estimates of average hours worked by employees on the one hand and by self-employed on the other are combined with the earlier estimates of the number of employees and self-employed to arrive at a consistent average number of hours worked by all persons engaged.

#### *Gross output deflator change*

The main data source for 1998-2004 is the detailed BEA Gross output by Industry data, which can be aggregated to replicate the deflators as shown in the GDP by Industry dataset. Using gross output at current prices from this source, Törnqvist aggregates are calculated for industries on the AUX list:

$$\Delta \ln P^{t,t-1} = \sum_i \frac{1}{2} \left( \frac{y_i^t}{\sum_i y_i^t} + \frac{y_i^{t-1}}{\sum_i y_i^{t-1}} \right) \Delta \ln P_i^{t,t-1}, \quad (1)$$

where  $P_i$  is the price index of industry  $i$  and  $y_i$  is the output of industry  $i$ . So in words, the price change of the aggregate industry from year  $t-1$  to year  $t$  is equal to the weighted average price change of the detailed industries, where the weights are equal to the average share in output over the two years of each of these detailed industries. For a number of industries, the BEA deflator data is supplemented by BLS EMP data. For motor vehicle wholesale and retail trade and other wholesale and retail trade, the output indices from the BLS Industry Productivity and Costs program are used in combination with the gross output data described above. For the period 1977-1997, the main source is the gross output deflator data in the BLS EMP dataset. For wholesale and retail trade, the old SIC-based gross output data, as described above, is used. For other detailed industries, the same price change is assumed as for the broader aggregate.

#### *Intermediate input price deflator*

The BEA estimates an implicit value added deflator based on the gross output deflator of an industry and the intermediate input price index. The intermediate input price index is estimated based on Use tables and price indices at a level of detail that is not publicly available. As a result, in many cases, developing alternative intermediate input deflators for detailed industries on the AUX list is unlikely to lead to more reliable estimates of value added prices. However, in other cases, estimates for detailed industries are likely to improve value added deflator estimates. A case in point is the computer industry. In the BEA dataset, the computer industry (NAICS 3341) is part of the broader Computer and electronic products industry (NAICS 334). However, the computer industry uses more semiconductors as intermediate inputs than other parts of that industry and semiconductors show a much different price development than other commodities.

The final column of Table 2 shows whether a BEA intermediate input deflator is used for that industry or not. A BEA deflator is used if either 1) the AUX industry in question is a direct match to an industry on the BEA list, 2) the Benchmark Use table does not provide information about intermediate input use of that specific industry or 3) if

specific estimates of intermediate input prices leads to large discrepancies. A large discrepancy is defined based on the growth of value added at constant prices, for which two alternatives are compared. First, value added deflators for each industry on the AUX list are calculated using specifically estimated intermediate input deflators (the estimation procedures are described below). Next, value added deflators are calculated based on the BEA intermediate input deflators. Both sets of value added deflators are then aggregated to the BEA industries and used to calculate growth of value added at constant prices. A large discrepancy is signalled if the average growth rate based on estimated intermediate input deflators over the 1998-2004 period differs by more than 10% from the BEA benchmark. So, for example, estimating specific intermediate input deflators for agricultural services, forestry and fishing leads to an aggregate average growth rate of value added at constant prices of 8.1 percent, while the growth rate based on the BEA GDP by Industry data was only 7.2 percent (a difference of 12%).<sup>19</sup> In contrast, using the BEA intermediate input deflator of the aggregate industry for each of the detailed industries leads to an aggregate average growth of 7.2 percent, so using the BEA intermediate input deflator is preferable. In the case of Computer and electronic products, estimating specific intermediate input deflators leads to a difference with the BEA totals of only 3 percent, compared to a difference of 9 percent if BEA intermediate input deflators were used, so here, specific intermediate input deflators seem preferable.

So to summarize, a separate estimate of the intermediate input deflator is only used if it is likely to improve the detailed industry results while not creating large discrepancies at more aggregate levels. For the entire 1977-2004 period, we use the intermediate use shares of the 1997 Benchmark Use table in combination with the gross output deflators described above to estimate intermediate input deflators.<sup>20, 21</sup> As the BEA provides overall intermediate input deflators only for the period 1987-2004, the 1977-1986 deflators are all based on specific estimates based on the 1997 Use table.

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<sup>19</sup> This exercise was performed using the data for the 1998-2002 period and has since not been revised. The average growth rates in the text refer to this period and the GDP by Industry release of 2003.

<sup>20</sup> In principle, earlier Benchmark Use tables could be converted to a NAICS basis and intermediate years could be estimated through a RAS procedure, but at present the necessary time investment seems too large for such an exercise. Similarly, we do not take import prices into account but use the price index of domestically produced commodities for all intermediate inputs.

<sup>21</sup> Based on the research of Aizcorbe, Flamm and Khurshid (2002), we use a different price index for intermediate use of semiconductors by the computer industry and by other industries for 1998-2004.

### *Value added price deflator*

The implicit value added price deflator is taken either directly from the BEA GDP by Industry dataset if there is a one-to-one correspondence with an industry on the AUX list, such as, for example, in the case of Farms. For all other industries, a double deflated price index is estimated based on the gross output and intermediate input deflators described above. The assumption is that an industry's gross output price index is a weighted average of the value added price index and the intermediate input price index:

$$\Delta \ln P^{GO} = v\Delta \ln P^I + (1-v)\Delta \ln P^{VA}, \quad (2)$$

where  $v$  is the two-year average share of intermediate inputs in gross output at current prices, analogous to equation (1).<sup>22</sup> Since all variables except the value added price change,  $\Delta \ln P^{VA}$ , are known, the value added price change can be calculated implicitly.

### *Aggregate evaluation*

In a number of occasions in this document, references were made to the consistency of the industry estimates with more aggregate data, so that, for example, value added at current prices adds up to GDP. While the enforced consistency can be verified (i.e. adding up value added), a final check is whether aggregate labour productivity growth based on the 60-industry database is comparable to that of the Total Economy Database. There are a number of differences between these databases, such as GDP at market prices in the Total Economy Database compared to GDP at basic prices (or more appropriately, factor cost) in the 60-industry database. Figure 2 plots annual labour productivity growth based on both databases. As this figure makes clear, the two series move together closely. Differences between the two series can on average be attributed in equal parts to differences between the output series and the total hours worked series. Furthermore, averaged over a number of years, the differences mostly disappear, so the over the 1977-2004 period, the Total Economy Database shows average annual labour productivity growth of 1.61 percent and the 60-industry database shows 1.56 percent per year. For

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<sup>22</sup> Intermediate input at current prices is calculated implicitly based on gross output at current prices and value added at current prices as described above.

different sub-periods, the two productivity measures are also quite similar. For the period 1995-2004, the average annual growth rates are 2.38 versus 2.30, respectively.

In a similar fashion, Figure 3 compares the growth of output per hour in the nonfarm business sector from the BLS with growth of value added per hour worked in the non-agricultural market economy.<sup>23</sup> There are differences in coverage between these two series, with, for example, the BLS measure including government enterprises and parts of health and education but the 60-industry series excluding those. The correspondence between the two series is still fairly close. The average labour productivity growth rate for 1977-2004 is 1.90 percent per year for the BLS series and 2.08 percent for the 60-industry series. For 1995-2004, the two average growth rates are 2.93 and 3.11 percent respectively. This suggests that any assessments about industry developments can be easily related to aggregate trends.

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<sup>23</sup> This industry grouping includes all industries except ISIC 01, 02, 05, 70, 75, 80, 85 and 95. The BLS data can be downloaded at [www.bls.gov/lpc](http://www.bls.gov/lpc).

**Table 1 List of industries in the 60-industry database**

<u>60IND</u>	<u>Industry description</u>	<u>ISIC rev. 3</u>
1	Agriculture	01
2	Forestry	02
3	Fishing	05
4	Mining and quarrying	10-14
5	Food, drink & tobacco	15-16
6	Textiles	17
7	Wearing apparel	18
8	Leather and footwear	19
9	Wood & products of wood and cork	20
10	Pulp, paper & paper products	21
11	Printing & publishing	22
12	Mineral oil refining, coke & nuclear fuel	23
13	Chemicals	24
14	Rubber & plastics	25
15	Non-metallic mineral products	26
16	Basic metals	27
17	Fabricated metal products	28
18	Machinery, nec	29
19	Office and computing machinery	30
20	Insulated wire and cable	313
21	Other electrical machinery and apparatus nec	31ex313
22	Electronic valves and tubes	321
23	Telecommunication equipment	322
24	Radio and television receivers	323
25	Scientific instruments	331
26	Other instruments	33ex331
27	Motor vehicles	34
28	Building and repairing of ships and boats	351
29	Aircraft and spacecraft	353
30	Railroad equipment and transport equipment nec	352+359
31	Furniture, miscellaneous manufacturing; recycling	36-37
32	Electricity, gas and water supply	40-41
33	Construction	45
34	Sale and repair of motor vehicles and sale of fuel	50
35	Wholesale trade, except of motor vehicles	51
36	Retail trade, except of motor vehicles; repair of household goods	52
37	Hotels & restaurants	55
38	Inland transport	60
39	Water transport	61
40	Air transport	62
41	Supporting and auxiliary transport activities; activities of travel agencies	63
42	Post and telecommunications	64
43	Financial intermediation, except insurance and pension funding	65
44	Insurance and pension funding, except compulsory social security	66
45	Activities auxiliary to financial intermediation	67
46	Real estate activities	70
47	Renting of machinery and equipment	71
48	Computer and related activities	72
49	Research and development	73
50	Legal, technical and advertising	741-3
51	Other business activities, nec	749
52	Public administration and defence; compulsory social security	75
53	Education	80
54	Health and social work	85
55	Other community, social and personal services	90-93
56	Private households with employed persons	95
57	Extra-territorial organizations and bodies	99

ISIC rev. 3 refers to the International Standard Industrial Classification, revision 3; see <http://unstats.un.org/UNSD/cr/registry/regcst.asp?CI=2>.

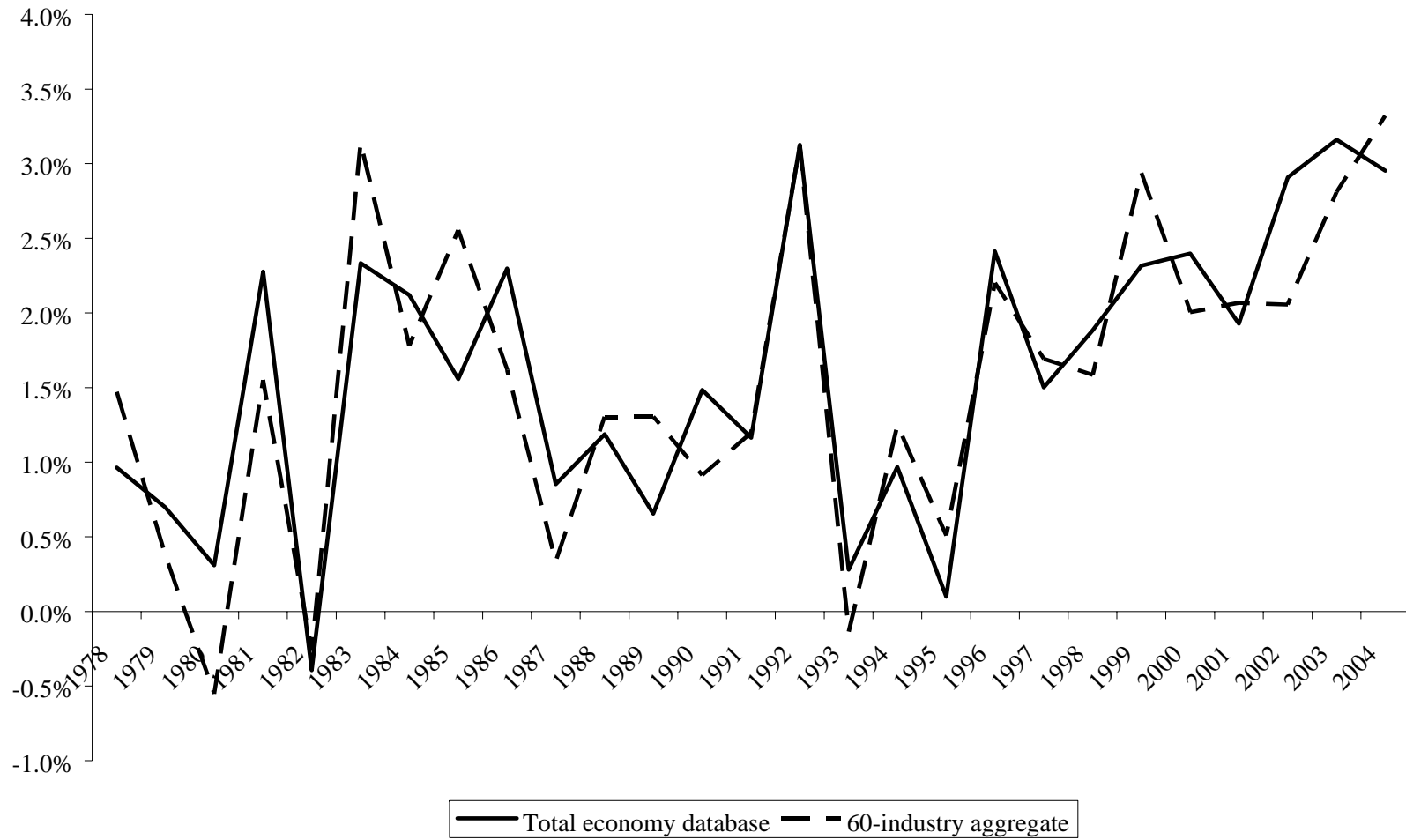
**Table 2 Auxiliary list of industries to move from BEA to 60IND list**

AUX_NO	NAICS Industry description	NAICS97	60IND	Use BEA?
1	Farms	111	112	1 Yes
2	Support Activities for agriculture and forestry	115	1	Yes
3	Forestry and logging	113	2	Yes
4	Fishing, hunting and trapping	114	3	Yes
5	Mining	21	4	Yes
6	Utilities	22	32	Yes
7	Construction	23	33	Yes
8	Wood products	321	9	Yes
9	Nonmetallic mineral products	327	15	Yes
10	Primary metals	331	16	Yes
11	Fabricated metal products	332	17	Yes
12	Machinery, excl. Office Machinery and Photographic, Optical Instrument and Lens and Photocopying Equipment Manufacturing	333ex333313-15	18	No
13	Office Machinery and Photocopying Equipment Manufacturing	333313+333315	19	No
14	Optical Instrument and Lens Manufacturing	333314	26	No
15	Computer and Peripheral Equipment Manufacturing	3341	19	No
16	Semiconductor and Other Electronic Component Manufacturing	3344	22	No
17	Communications Equipment Manufacturing	3342	23	No
18	Audio and Video Equipment Manufacturing	3343	24	No
19	Navigational, Measuring, Electromedical, and Control Instruments excl. Watch, Clock, and Part Manufacturing	3345ex334518	25	No
20	Watch, Clock, and Part Manufacturing	334518	26	No
21	Manufacturing and Reproducing Magnetic and Optical Media	3346	11	No
22	Household Appliance Manufacturing	3352	18	Yes
23	Communication and Energy Wire and Cable Manufacturing	33592	20	Yes
24	Electric Lighting Equipment, Electrical Equipment and Other Electrical Equipment and Component Manufacturing, excl. Communication and Energy Wire and Cable Manufacturing	3351 3353 3359ex33592	21	Yes
25	Motor Vehicle, Motor Vehicle Body and Trailer and Motor Vehicle Parts Manufacturing	3361, 3362, 3363	27	Yes
26	Ship and Boat Building	3366	28	No
27	Aerospace Product and Parts Manufacturing	3364	29	No
28	Railroad Rolling Stock and Other Transportation Equipment Manufacturing	3365 3369	30	No
29	Furniture and related products	337	31	Yes
30	Medical Equipment and Supplies, excl. Laboratory Apparatus and Furniture and Ophthalmic Goods Manufacturing	3391ex339111+339115	25	No
31	Ophthalmic Goods Manufacturing	339115	26	No
32	Laboratory Apparatus and Furniture and Other Miscellaneous Manufacturing	339111 3399	31	No
33	Food and beverage and tobacco products	311, 312	5	Yes
34	Textile mills and textile product mills	313, 314	6	Yes
35	Apparel Manufacturing	315	7	No
36	Leather and Allied Product Manufacturing	316	8	No
37	Paper products	322	10	Yes
38	Printing and related support activities	323	11	Yes
39	Petroleum and coal products	324	12	Yes
40	Chemical products	325	13	Yes
41	Plastics and rubber products	326	14	Yes
42	Motor Vehicle and Motor Vehicle Parts and Supplies Wholesalers	4211	34	Yes
43	Wholesale trade, excl. Motor Vehicle and Motor Vehicle Parts and Supplies	42ex4211	35	Yes
44	Motor Vehicle and Parts Dealers and Gasoline Stations	441+447	34	Yes
45	Retail trade excl. Motor Vehicle and Parts Dealers and Gasoline Stations	44ex441+447+45	36	Yes
46	Air transportation	481	40	Yes

**Table 2, Continued**

AUX NO NAICS Industry description	NAICS97	60IND	Use BEA?
47 Rail transportation	482	38	Yes
48 Water transportation	483	39	Yes
49 Truck transportation	484	38	Yes
50 Transit and ground passenger transportation	485	38	Yes
51 Pipeline transportation	486	38	Yes
52 Scenic and Sightseeing Transportation and Support Activities for Transportation	487+488	41	No
53 Couriers and Messengers	492	42	No
54 Warehousing and Storage	493	41	Yes
55 Newspaper, Periodical, Book, and Database Publishers	5111	11	Yes
56 Software Publishers	5112	48	Yes
57 Motion picture and sound recording industries	512	55	Yes
58 Telecommunications	5133	42	No
59 Radio and Television Broadcasting and Cable Networks and Program Distribution	5131+5132	55	No
60 Data Processing Services	5142	48	No
61 Information Services	5141	55	No
62 Monetary Authorities - Central Bank and Credit Intermediation and Related Activities	521+522	43	Yes
63 Securities, Commodity Contracts, and Other Financial Investments and Related Activities	523	45	Yes
64 Insurance Carriers and Related Activities	524	44	Yes
65 Funds, Trusts, and Other Financial Vehicles	525	44	Yes
66 Real estate	531	46	Yes
67 Rental and leasing services and lessors of intangible assets	533	43	Yes
68 Rental and leasing services and lessors of intangible assets	532	47	Yes
69 Legal services	5411	50	Yes
70 Computer systems design and related services	5415	48	Yes
71 Scientific Research and Development Services	5417	49	No
72 Accounting, Tax Preparation, Bookkeeping, and Payroll, Architectural, Engineering, and Related, Management, Scientific, and Technical Consulting, Advertising and Related and Marketing Research and Public Opinion Polling	5412+5413+5416+5418+54191	50	No
73 Specialized Design and Other Professional, Scientific, and Technical Services excl. Marketing Research and Public Opinion Polling	5414+5419ex54191	51	No
74 Management of companies and enterprises	55	50	Yes
75 Travel Arrangement and Reservation Services	5615	41	Yes
76 Office Administrative Services	5611	50	Yes
77 Facilities Support, Employment, Business Support, Investigation and Security Services, Services to Buildings and Dwellings and Other Support Services	5612-5614+5616-5619	51	Yes
78 Waste management and remediation services	562	55	Yes
79 Educational services	61	53	Yes
80 Health care and social assistance	62	54	Yes
81 Arts, entertainment, and recreation	71	55	Yes
82 Accommodation and food services	72	37	Yes
83 Automotive Repair and Maintenance	8111	34	No
84 Repair and Maintenance, excl. Automotive Repair and Maintenance	8112-8114	36	No
85 Personal and Laundry Services and Religious, Grantmaking, Civic, Professional, and Similar Organizations	812+813	55	No
86 Private Households	814	56	No
87 Federal general government	GenGov	52	Yes
88 Federal government enterprises	491	42	Yes
89 State and local general government	GenGov	52	Yes
90 State and local schools	Edu	53	Yes
91 State and local hospitals	Health	54	Yes
92 State and local government enterprises	GovEn	52	Yes

**Figure 2, Comparing the growth in U.S. GDP per hour worked, GGDC Total Economy Database vs. 60-industry database, 1977-2004**



**Figure 3, Comparing the growth in U.S. nonfarm business labour productivity growth, BLS vs. GGDC 60-industry database, 1977-2004**

