

Small Business Share of NAICS Industries

Final Report
SBAHQ-01-M-0156

Submitted to:
Small Business Administration
Office of Advocacy

June 28, 2002

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Introduction

The small and large business shares of private, nonfarm GDP, also called Gross Product Originating (GPO), by industry have been estimated for the period 1958 through 1999. Joel Popkin and Company recently completed an update of the GDP by firm size estimates for SBA's Office of Advocacy.¹ The industry estimates of firm size GDP are based on the traditional Standard Industrial Classification (SIC) of the United States aggregation of industries.²

However, the U.S. has a new system for classifying industries. It is the North American Industrial Classification System (NAICS) and was first introduced in 1997. The NAICS is a much broader reordering of the classification system than has been done in the past. For that reason, the U.S. statistical system is phasing in the NAICS method of classifying industries over a multi-year period. During that phase-in period, different sets of statistics will use different classification systems for ordering their industries. The Census Bureau, for example, has already begun using NAICS for most of its industry-based statistics. However, industry classification of BEA's GPO statistics is still based on the SIC system and will not be changed to a NAICS system until late 2004.

The share of overall private, nonfarm GDP that is allocated to small business, should not change because of a change in the underlying classification of the industrial structure. However, NAICS is the classification system of the future and provides a much clearer snapshot of today's economy than does the SIC system it replaces. It is also the system that will provide the clearest picture of what tomorrow's economy might resemble. Therefore, it is timely to assess the possibility of producing two different sets of firm-size industry estimates for GDP. The current one, showing firm size detail for six major private nonfarm industries under the SIC system and a second one based on the private nonfarm industry sectors as defined by NAICS. The purpose of this paper is to assess that possibility and to discuss some of the issues surrounding the change from the SIC-based classification system to the NAICS-based classification system.

¹ "Small Business Share of Economic Growth", contract # SBA-HQ-00-C-0001, December 2001.

² The GDP by industry estimates are based on the 1987 version of the SIC.

Small business share estimates have been produced for most of the major NAICS industries for this project and are presented in Table 3. For industries in which there were only small definitional changes, such as manufacturing and construction, there are only small changes between the NAICS-based and SIC-based estimates. More interesting are the results that provide more in-depth information about the service producing sectors of the economy that the NAICS classification provides. The SIC's finance, insurance and real estate division had a little less than half of its gross product originating in small businesses. With the NAICS industry distribution, it can be seen that the small businesses are mostly in the real estate industry while the finance and insurance industries are much more heavily dominated by large businesses. Similarly, the small business dominated but very aggregated SIC services division shows a lot more variation under the NAICS breakdown. While most of the NAICS sectors associated with services are still small business dominated that is not uniformly true. Educational services, for example, appear to be more heavily large business than is services overall. The other services sector, with its large proportion of personal service industries, is dominated by small businesses, as expected. However the arts, entertainment and recreation services sector also appears to be heavily weighted toward small businesses. These estimates are only preliminary numbers based on rough estimates of GPO industries split up into NAICS industries. Consequently, these estimates should be taken as indicative of what the NAICS industry basis will show rather than definitive NAICS industry estimates.

The major problem in making more precise firm-size estimates for NAICS-based industries for the current time period is in the underlying GPO data. Gross product data by industry are currently presented only on an aggregated SIC basis and that makes it very difficult to produce accurate estimates of NAICS-based industries. For industries such as mining and manufacturing where there were few changes between the SIC and NAICS definitions, the estimates are more accurate than for some of the entirely new NAICS industries. Other data problems encountered relate to a lack of NAICS-based benchmarks for the underlying components of gross product and to some inconsistencies between SIC-based and NAICS-based sources of data.

In addition to current NAICS-based estimates of small business shares, it would also be useful to be able to estimate what the small business share of the NAICS-based industries would look like in the near future. That would provide a broader understanding of where small businesses are today and the role they are expected to play in the future U.S. economy. Because of the preliminary nature of the NAICS-based industry estimates for the current period, it is not possible to produce detailed industry projections with a high level of confidence. A preliminary analysis and a forward-looking estimate of the small business share of the U.S. private nonfarm economy are found in Appendix B. That estimate uses simplifying economic assumptions and then analyzes the prospects for small businesses in each of the major NAICS-based sectors to assess the likelihood of those assumptions being valid. While it does not provide estimates of small business shares by industry sector it does indicate the direction and potential magnitude of the change in those small business shares over the next decade.

This report first will discuss the background of changing from an SIC to a NAICS classification system. It will then present the preliminary results of the NAICS-based firm-size estimates for 1998 and make some comparison of those results to the 1997 SIC-based results. Following that will be a general discussion of the process for calculating the numbers and some of the specific issues related to making this change in the classification system. Appendix A of the report contains a detailed table relating SIC-based GPO categories to NAICS industry sectors. Appendix B presents a preliminary analysis of the small business share of private nonfarm GDP a decade from now and the prospects for small businesses in each industry sector in the future.

Background of the Changes in the Classification System

The purpose of an industrial classification system is to provide a common basis for assigning establishments to industries based on the activities in which the establishments are engaged. One major advantage of an industrial classification system is that it makes data more comparable by providing a uniform basis for the collection and presentation of statistical data collected by various sources. The Standard Industrial Classification System of the U.S. came into being in 1938-39 when the first lists of

manufacturing and nonmanufacturing industries were produced. Together those lists became the Standard Industrial Classification (SIC) for the United States. While the SIC has been revised roughly every ten years, its basic structure has remained the same. It has had ten major divisions (lettered from A-J), under each division is a different number of major groups identified by two-digit numbers (these generally are referred to as the 2-digit SIC level of aggregation.) Under each major group there are 3-digit group numbers, and under the 3-digit groups there are 4-digit industry numbers.³

Over the past decade, the SIC came under increasing criticism for not representing the economy of today. Some new and rapidly growing industries either were not specifically recognized or were grouped in with an amalgam of other industries in a way that made it very difficult to track their growth. Plus, the closer economic ties that the U.S. had with Canada and Mexico due to the North American Free Trade Agreement (NAFTA) helped highlight the usefulness of having a common method of classifying industries in order to improve the comparison of statistics across the three countries. In response to these concerns, an International Conference on the Classification of Economic Activities was convened in Williamsburg, Virginia in 1991. In July 1992, the Office of Management and Budget established the Economic Classification Policy Committee (ECPC) with the task of taking a new look at the classification of industries for statistical purposes. The North American Classification System was the result of the work of the ECPC and its counterparts in Mexico and Canada.⁴ It officially replaced the U.S.' SIC system in 1997 although the U.S. is still in the process of fully implementing the change to NAICS.

NAICS, unlike the SIC, has as its conceptual framework a production-oriented or supply-based organizing system. This means that establishments are grouped into industries according to similarity in the processes used to produce goods or services. This

³ The first two digits of the 3-digit and 4-digit numbers correspond to the 2-digit major group number under which that group or industry is classified.

⁴ NAICS was a joint product of Mexico's Instituto Nacional de Estadística, Geografía e Informática (INEGI); Canada's central statistical agency, Statistics Canada; and the U.S.' Economic Classification Policy Committee.

facilitates the collection of input and output data in a consistent and comparable manner by the statistical agencies in the three countries using NAICS.⁵

NAICS maintained a hierarchical structure similar to that of the SIC system. In place of the SIC divisions, NAICS has 2-digit sector codes. There is not a one-to-one correspondence between the SIC divisions and the 2-digit sector codes. For example, the manufacturing division of the SIC is replaced with a NAICS manufacturing sector but it has three 2-digit codes, 31-33. Under each sector is a 3-digit sub-sector classification, followed by more disaggregated industry groupings. The lowest level of industry detail for the U.S. is a six-digit industry.⁶ Table 1, provides a summary of the different levels of aggregation and the number of sub-industries, groups and industries at each of those levels. There are a total of 1170 U.S. industries listed under the NAICS classification system, 358 of which did not exist under the SIC system of classification system.

The GPO estimates have traditionally been estimated at the SIC division level of industry aggregation although it has not always been possible to produce estimates for each separate SIC division. Consequently, the starting point for producing NAICS-based estimates is to analyze the possibility of producing them at the comparable NAICS sector level of industry aggregation. The sector code numbers and titles are shown in the first two columns of Table 1.

⁵ Much of the information used in this description and background of NAICS can be found in the introduction to *North American Industry Classification System, United States 1997*.

⁶ Generally, the 5-digit level is considered to be the common level of aggregation for NAICS industries, the level at which comparability could generally be found across all three countries using the classification system.

Table 1: NAICS United States Structure

NAICS 2-digit Sector Number	Industry Sectors	Sub- Sectors	Industry Groups	NAICS 5-digit industries	U.S. 6-digit industries	Total U.S. industries	New industries
		Number of industries or industry groupings					
11	Agriculture, Forestry, Fishing and Hunting	5	19	42	32	64	20
21	Mining	3	5	10	28	29	-
22	Utilities	1	3	6	6	10	6
23	Construction	3	14	28	-	28	3
31-33	Manufacturing	21	84	184	408	474	79
42	Wholesale trade	2	18	69	-	69	-
44-45	Retail Trade	12	27	61	18	72	17
48-49	Transportation and Warehousing	11	29	42	25	57	28
51	Information	4	9	28	12	34	20
52	Finance and Insurance	5	11	32	15	42	23
53	Real Estate and Rental and Leasing	3	8	19	9	24	15
54	Professional, Scientific, and Technical Services	1	9	35	17	47	28
55	Management of Companies and Enterprises	1	1	1	3	3	1
56	Administrative & Support, Waste Management & Remediation Services	2	11	29	23	43	29
61	Educational Services	1	7	12	7	17	12
62	Health Care and Social Assistance	4	18	30	16	39	27
71	Arts, Entertainment, and Recreation	3	9	23	3	25	19
72	Accommodation and Food Services	2	7	11	7	15	10
81	Other Services (except Public Administration)	4	14	30	30	49	19
92	Public Administration	8	8	29	-	29	2
	Total	96	311	721	659	1170	358

Source: North American Industry Classification System, United States, 1997

Estimating GPO on a NAICS Industry Basis

The eighteen private nonfarm sectors shown on Table 1 constitute the ideal set of industries for which it would be desirable to have firm size GDP estimates. However, it is not possible to produce estimates for each of those sectors. As with the current SIC-based estimates, the mining and manufacturing sectors need to be combined because of definitional issues related to the petroleum-refining companies. Because of IRS data limitations, the retail and wholesale trade sectors must also be combined into a single trade sector. One further combined sector was produced for these estimates. That was the aggregation of the professional, scientific and technical services sector with the administrative and support and waste management and remediation services sector.⁷ After those three consolidations, the NAICS groupings for which at least partial firm-size estimates were produced are: 1) mining and manufacturing; 2) utilities; 3) construction; 4) trade; 5) transportation and warehousing; 6) information; 7) finance and insurance; 8) real estate and rental and leasing; 9) professional, scientific, and technical services combined with administrative and support and waste management and remediation services; 10) management of companies and enterprises; 11) educational services; 12) health care and social assistance; 13) arts, entertainment, and recreation; 14) accommodation and foodservices; 15) other services. The agriculture and government sectors are not included in the calculations of private, nonfarm GDP and are not a part of the GPO by firm size data set.

Several NAICS sectors have the same name as the SIC division that preceded them, such as manufacturing, but none of them are defined exactly the same way as its SIC predecessor. Some of the NAICS industry sectors have most of the same detailed industries in them as did the SIC versions. However, there has been a major recasting of many of the industries, especially among the service-producing sectors. The SIC division least impacted by definitional changes was mining, the most impacted was the services division. Table 2 provides a summary of the magnitude of the shifts. It shows how much of each of the 15 NAICS-based sectors listed above are coming from the SIC-based

⁷ Once the GPO data are produced on a NAICS basis, it should be possible to produce separate firm-size estimates for these two sectors. The current limitation is that it is too difficult to separate the two-digit SIC-based industries between these two sectors.

Table 2: Comparison of NAICS Sectors to GPO SIC-Based Categories

NAICS 2-Digit Sectors	GPO Industry Level of Detail (SIC basis)	Revenue (Thousand \$)	Paid Employment (Number)	Payroll (Thousand \$)
21, 31-33 -Mining and Manufacturing		4,016,050,183	17,397,022	592,899,327
	Total moved out of the SIC-based Mining and Manufacturing divisions	131,263,074	825,968	27,069,239
	Share of SIC-based Mining and Manufacturing divisions moved to other NAICS sectors	3.2%	4.6%	4.4%
	4-digit codes entering from other sectors	14,743,282	153,966	3,375,864
	Share of NAICS-based Mining and Manufacturing sectors coming from outside the SIC-based Mining and Manufacturing divisions	0.4%	0.9%	0.6%
22 Utilities		411,713,327	702,703	36,594,684
	Total moved out of the SIC-based Electric, Gas and Sanitary Services	36,196,877	133,214	5,291,529
	Share of SIC-based Electric, Gas and Sanitary moved to other NAICS sectors	8.1%	15.9%	12.6%
	Share of NAICS-based Utilities Sector coming from outside the SIC-based Electric, Gas and Sanitary Services	0%	0%	0%
23 Construction		858,581,046	5,664,840	174,184,604
	Total moved out of the SIC-based Construction division	1,518,864	18,675	545,024
	Share of SIC-based Construction moved to other NAICS sectors	0.2%	0.3%	0.3%
	4-digit industries entering from other sectors	25,304,981	173,226	3,767,624
	Share of NAICS-based Construction sector coming from outside the SIC-based Construction division	2.9%	3.1%	2.2%
48-49 Transportation & Warehousing		315,840,905	2,897,012	81,562,484
	Total moved out of the SIC-based Transportation groups	50,881,666	559,076	14,118,718
	Share of SIC-based Transportation moved to other NAICS sectors	14.7%	16.4%	15.1%
	4-digit industries entering from other sectors	2,656,389	41,183	829,492
	Share of NAICS-based Trucking and Warehousing Sector coming from outside the SIC-based Transportation groups	0.8%	1.4%	1.0%
51 Information		623,268,429	3,064,418	129,459,486
	Total moved out of the SIC-based Communications & Motion Picture Industry groups	26,026,748	332,223	6,011,845
	Share of SIC-based Communications & Motion Picture moved to other NAICS sectors	6.2%	16.4%	7.7%
	4-digit industries entering from other sectors	232,167,091	1,375,496	57,699,468
	Share of NAICS-based Information sector coming from outside the SIC-based Communications and Motion Picture groups	37.2%	44.9%	44.6%
41-46 Trade		6,520,543,790	19,787,660	452,110,908
	Total moved out of the SIC-based Trade divisions	268,485,235	7,896,957	73,240,404
	Share of SIC-based Trade moved to other NAICS sectors	4.0%	28.5%	13.9%
	4-digit industries entering from other sectors	7,821,716	10,563	350,269
	Share of NAICS-based Trade sectors coming in from outside the SIC-based Trade divisions	0.1%	0.1%	0.1%
52 Finance & Insurance		2,197,771,283	5,835,214	264,551,401
	Total moved out of the SIC-based Finance & Insurance	8,585	26	1,809
	Share of SIC-based Finance & Insurance moved to other NAICS sectors	0.0%	0.0%	0.0%
	4-digit industries entering from other sectors	41,551,292	118,825	4,250,242
	Share of NAICS-based Finance & Insurance sector coming from outside the SIC-based Finance & Insurance	1.9%	2.0%	1.6%
53 Real Estate & Rental & Leasing		240,917,556	1,702,420	41,590,766
	Total moved out of the SIC-based Real Estate group	29,315,248	241,499	5,811,035
	Share of SIC-based Real Estate group moved to other NAICS sectors	16.3%	18.0%	17.4%
	4-digit industries entering from other sectors	90,168,303	603,844	13,939,692
	Share of NAICS-based Real Estate Rental & Leasing sector coming from outside the SIC-based Real Estate	37.4%	35.5%	33.5%
54 & 56 Professional, Scientific, & Technical Services and Administrative		891,186,999	12,708,576	368,735,774

Table 2: Comparison of NAICS Sectors to GPO SIC-Based Categories

NAICS 2-Digit Sectors	GPO Industry Level of Detail (SIC basis)	Revenue (Thousand \$)	Paid Employment (Number)	Payroll (Thousand \$)
Support & Waste Management & Remediation Services	Total moved out of the SIC-based Legal, Business and Other Services groups	180,240,375	1,154,599	47,621,190
	Share of SIC-based Legal, Business and Other Services groups moved to other NAICS sectors	18.5%	9.1%	12.3%
	4-digit industries entering from other sectors	94,859,528	1,149,826	27,767,960
	Share of NAICS-based Prof & Tech, Admin & Waste Management sectors coming from outside the SIC industries 73, 81, 84,87	10.6%	9.0%	7.5%
55 Management of Companies and Enterprises	Total moved out of the SIC-based Holding and Other Investment group	76,162,201	132,027	5,299,771
	Share of SIC-based Holding and Other Investment Offices group moved to other NAICS sectors	54.9%	51.2%	36.8%
	Amount entering from other NAICS sectors	29,975,818	2,491,698	145,086,214
	Share of NAICS-based Management of Companies and Enterprises coming from outside the SIC-based Holding and Other Investment Offices	32.4%	95.3%	94.1%
61 Educational Services	Total moved out of the SIC-based Educational Services group	860,933	22,044	373,164
	Share of SIC-based Educational Services group moved to other NAICS sectors	5.2%	8.9%	7.0%
	4-digit codes moved in from other sectors	4,742,016	95,248	1,407,730
	Share of NAICS-based Educational Services sector coming from outside the SIC-based Educational Services group	23.2%	29.7%	22.1%
62 Health Care & Social Assistance	Total moved out of the SIC-based Health and Social Services group	26,607,410	184,757	4,811,924
	Share of SIC-based Health and Social Services group moved to other NAICS sectors	2.9%	1.4%	1.3%
	4-digit codes moved in from other sectors	7,121,657	163,198	2,954,209
	Share of NAICS-based Health and Social Services coming from outside the SIC-based Health and Social Services group	0.8%	1.2%	0.8%
71 Arts, Entertainment & Recreation	Total moved out of the SIC-based Amusement and Recreation Services	4,857,866	96,881	1,308,011
	Share of SIC-based Amusement and Rec. Services moved to other NAICS sectors	5.1%	6.3%	4.4%
	4-digit codes moved in from other sectors	13,769,499	141,918	4,298,439
	Share of NAICS-based Arts and Entertainment sector coming from outside the SIC-based Amusement and Recreation Services groups	13.1%	8.9%	13.1%
72 Accommodation and Foodservices	Share of SIC-based Hotels and Other Lodging Places moved to other NAICS sectors	0.0%	0.0%	0.0%
	4-digit codes moved in from other sectors	251,941,763	7,754,567	70,333,544
	Share of NAICS-based Accommodation and Foodservices coming from outside the SIC-based Hotels and Other Lodging Places group	71.9%	82.0%	72.5%
81 Other Services (except public administration)	Total moved out of the SIC-based Personal, Auto, Misc and Membership Services groups	48,835,530	605,787	10,195,679
	Share of SIC 72,75,76,86 moved to other NAICS sectors	20.9%	17.6%	15.8%
	4-digit codes moved in from other sectors	80,528,456	426,657	11,074,528
	Share of NAICS-based Other Services sector coming from outside SICs 72, 75, 76, 86	30.3%	13.1%	16.9%

major groups that most closely match them.⁸ GPO by industry data are based, for the most part, on these major groups of the SIC. If the GPO data were disaggregated to the level of detail consistent with 4-digit SIC industries, it would be possible to make a relatively good estimate of them on a NAICS basis by adding up the 4-digit SIC industries into new aggregations. However, the GPO data are not produced at that level of industry detail. Most of the GPO data are estimated at the division level or for some industries the 2-digit SIC level consistent with Table 2. This level of aggregation meant that only approximations of the NAICS sectors could be produced.

Preliminary Results Based on Estimated NAICS GPO Data

Table 3A, provides preliminary NAICS-based estimates of small business shares using the preliminary estimates of firm-size shares for 1998 and the approximations to NAICS-based GPO data for 1998. The A section of the table shows the 1998 results for the NAICS estimates, the B section of the table shows the 1997 and preliminary 1998 results of the SIC based firm-size estimates of GDP.

Table 3A: Small Business Shares by NAICS Industry			
NAICS-Based Industry Sectors	Total SB Share	SB Compensation Share	SB Noncompensation Share
Mining and Manufacturing	30	34	22
Utilities	22	11	25
Construction	90	85	97
Trade	64	62	65
Transportation and Warehousing	40	35	47
Information	25	22	29
Finance and Insurance	29	27	30
Real Estate, Rental and Leasing	74	70	75
Professional & Technical, Administrative, Support & Waste Management	65	56	82
Management Holding Companies	**	8	**
Educational Services	45	41	90
Health and Social Services	57	50	84
Arts, Entertainment and Recreation Services	76	75	79
Accommodation and Foodservices	57	56	60
Other Services	71	62	91
Total Private Nonfarm NAICS	50	48	54
** The total and the noncompensation shares do not include the holding companies			

⁸ A more detailed Table 2 and a further explanation about the movements of receipts, payroll and employment from SIC-based industries to NAICS-based sectors, are presented in Appendix A.

	Total SB Share		SB Compensation Share		SB Noncompensation Share	
	1997	1998	1997	1998	1997	1998
SIC-Based Industry Divisions						
Mining and Manufacturing	25	27	28	31	22	22
Construction	90	90	87	87	96	96
TCPU	26	26	26	26	27	26
Trade	63	65	62	65	64	64
Fire	45	45	34	34	51	51
Services	68	68	62	63	81	81
Total Private Nonfarm SIC	50	52	50	51	51	52

The total private nonfarm estimate whether aggregated from SIC-based industry estimates or aggregated from NAICS-based industry estimates should be the same. Based on these preliminary NAICS-based estimates, it does not come out equal to the previously calculated SIC-based share. There are several possible explanations for this result including the incomplete estimates of GPO on a NAICS basis. However, benchmarking issues probably also contribute to this result. Those issues are further discussed later in this paper.

As would be expected, the results of industries with very similar definitions between the SIC-based and the NAICS-based classification systems show similar results. The manufacturing and mining share changes from 27 percent small business based on the SIC-based estimates to 30 percent small business under the NAICS-based estimate. Publishing, the largest sector to be removed from mining and manufacturing, is large-business dominated so it is reasonable to expect that the small business share of mining and manufacturing small would increase somewhat once publishing is moved out of manufacturing and into the information sector. Construction is very similar in definition in both classification systems and the small business share reflects that, remaining unchanged at 90 percent. The small business compensation share of trade is reduced by a little bit more than is the total share. This is a result of the foodservice category having been moved out of trade and into accommodation and foodservices. Since foodservice has a large labor component and is small business dominated, its removal from the SIC-based trade sector results in a small decline in the small business share.

Somewhat more interesting is the additional information about the role of small businesses in the U.S. economy that the NAICS classification provides. For example, the

SIC-based TCPU division was only 26 percent small business. But under the NAICS classification it is possible to see that within that broader industry aggregation was a utilities sector that is very heavily large business dominated (80 percent) and also a transportation and warehousing sector that, while still large business dominated (60 percent), has a lot more small business activity in it. The former FIRE division is actually the combination of the large business dominated finance and insurance sector and the heavily small business dominated real estate and rental and leasing sector.

Finally, the NAICS classification system shows a lot more detail than did the SIC's services division. The services division has always been one of the industries that was most heavily dominated by small businesses. Its expansion overtime has been one of the reasons that the small business share of GDP has been relatively constant the last few years even though the small business share of many of the individual SIC divisions has been declining. Looking at the individual NAICS sectors one sees that the educational services sector appears to be a large business dominated industry (at least based on compensation) whereas the other services sector and the arts, entertainment and recreation services sector are more dominated by small businesses than is the average for services overall. While still small business dominated, the accommodations and foodservices sector and the professional, technical, administrative and waste management sectors are much closer to the "average" of the SIC services division.

These preliminary numbers do present some puzzles such as the large small business share of some of the noncompensation components while the compensation components indicate a much smaller small business share. While this result may be perfectly valid, it may also be the result of either definitional differences in the new data sources or benchmarking issues. Both of those will be discussed later in this paper.

One of the new NAICS sectors, the management of companies and enterprises, was a very difficult sector to estimate. The definitional match between the data sources used to produce the firm-size share estimates and the GPO data were particularly poor for this sector. Consequently, a reasonable looking noncompensation share could not be

calculated.⁹ In addition, the comparison of data from the Census and data from the Statistics of U.S. Businesses (SUSB) for the portion of this sector that corresponds to SIC grouping 67, Holding and Other Investment Offices, are significantly at odds with one another. This seriously complicates the calculations of the compensation component as well. There is an extremely large difference between the SUSB and the Census estimates of the small business payroll share for SIC 67 in 1992 and in 1997 (close to 40 percentage points different.) Attempts to get an explanation for this difference have not produced an answer that seems to fully explain it other than there seems to be a difference between the Census and County Business Patterns benchmarks for this sector. However, as currently calculated this sector does pull the small business compensation share below 50 percent for 1998.

The Process of Calculating GDP by Firm Size for NAICS-Based Industries

To provide a more complete analysis of the numbers presented in Table 3, this section will cover the basic process by which the NAICS-based industry estimates were produced. In general, the estimating procedures followed the process used to estimate the SIC-based shares. However, certain parts of the SIC-based procedures can not be easily replicated using the available NAICS-based data, especially the benchmarking steps. The differences in the process undoubtedly account for part of the difference in the overall estimate of the small business share seen in Table 3.

The GPO statistics consist of the five major income-side components of GDP for each major industry grouping. The five components are: 1) compensation; 2) consumption of capital; 3) indirect business taxes and non-tax payments; 4) net interest; and 5) profit-type income. The general process used to estimate GPO by firm size is to divide each component into two categories based on how much of it originates in small business and how much originates in large business. Once all the components are divided into their firm-size categories, all of the small business components for each industry can be added together to determine the overall small business share for the industry and

⁹ This industry, by definition, will be predominantly large business but it is not possible to determine how, on a GPO basis, the large corporate offices should be allocated to this sector.

eventually the overall small business share of private nonfarm GDP. A simplified description of the process for producing the firm-size shares follows: 1) using Census data, the share of wages and salaries that can be allocated to each business size is determined; 2) using Census data, the share of corporate business receipts that can be allocated to large business is determined; 3) using the corporate receipts shares calculated in step 2, the IRS *Corporate Statistics of Income* (SOI) data are used to calculate business size-shares for the noncompensation components of each industry; 4) the shares are benchmarked where necessary; 5) the benchmarked shares are applied to the appropriate component of each industry's gross product to produce the large and small business components for each industry.

The first step in assessing if it was possible to produce small and large business estimates of NAICS-based industries was to determine which of the data necessary for the calculation of firm-size shares were being classified on a NAICS basis. The Census Bureau's 1997 quinquennial censuses of industry were collected using the SIC classification system. However, most of the data were reported on a NAICS basis of industrial classification with some information produced on both a NAICS and an SIC basis. This provided a NAICS/SIC bridge for some data. The census data provide three basic pieces of information on both an SIC and a NAICS basis at approximately a 4-digit SIC level of detail: revenues, payroll and employment. The other important source of Census information for calculating shares is the Statistics of U.S. Businesses (SUSB). This data set is produced every year and shows employment and payroll by firm size by detailed industry. The Census Bureau began to produce the Statistics of U.S. Businesses on a NAICS classification basis as of 1998. The 1997 SUSB was produced on an SIC basis.¹⁰

IRS statistics are used in conjunction with Census data to produce the share estimates. The IRS recently produced its first set of *Statistics of Income* data based on the

¹⁰ There are some other differences in the presentation of the SUSB data that can cause difficulties in comparing the 1997 and 1998 data, especially at a detailed level. Those differences do not have to do with the change in the industrial classification system but rather have to do with decisions about how to allocate businesses to detailed industries when there is incomplete information about their industry. Unfortunately, this makes producing 1997 NAICS-based payroll and employment estimates from SUSB virtually impossible.

NAICS industrial classification for the year 1998. The IRS data used to determine the firm size shares of the noncompensation components of GPO are from the table that shows selected income and balance sheet items distributed by the level of business receipts of the corporation.¹¹ In prior years, the IRS has produced that table showing seven major SIC divisions of private, nonfarm GDP.¹² However, the 1998 SOI statistics are allocated to industries based on NAICS sectors. Therefore, the distribution by business receipts table now shows seventeen major NAICS nonfarm industries instead of the previous seven SIC industries. The trade sector continues to be combined but the sixteen other major NAICS sectors are shown separately.

Consequently, all the main sources of data used to determine the firm-size shares for the division of GPO industries into small and large business have been presented on a NAICS basis as of 1998. If NAICS-based information from these sources were not available, it would not be possible to begin the task of estimating NAICS-based industry detail by firm size. Unfortunately, this is not the only condition that needs to be met to produce the NAICS-based numbers. As was mentioned earlier, the major stumbling block in producing the estimates is the basic GPO data by industry. Those data are still being estimated at an aggregated level of SIC-based industry detail, usually equivalent to about a 2-digit SIC aggregation but in some cases at the even more aggregate division level. To make firm-size estimates of GDP by NAICS-based industry requires having NAICS-based GPO estimates to which the firm-size shares, calculated from the Census and IRS data, can be applied.

To produce NAICS-based GPO estimates requires a reaggregation of the SIC-based components to represent the industry makeup of the new NAICS sectors. The difficulties of producing such estimates were touched on earlier in the paper. Summary Table 2 provides an idea of the magnitude of the discontinuity between the industry detail

¹¹ IRS information about the noncorporate legal forms of organization is also used in the calculations although they do not have to be divided between small and large business since noncorporate businesses are assumed to be small businesses. But, for firm size shares to be calculated the noncorporate statistics also have to be produced on a NAICS basis. They were as of the 1998 data.

¹² The wholesale and retail trade industries have been shown as a combined industry in the SOI corporate statistics by business receipts size for many years. That is the reason that the JPC estimates by firm size are shown for a combined trade sector.

used for the GPO data and the level of industry aggregation desired for the NAICS estimates. For the compensation components of GPO, this mismatch was not a major problem. There were sources of data on wages and salaries, other than the GPO data, that were at a 4-digit level of SIC industry detail and could be used to approximate the wages and salaries component of GPO relatively well. The SUSB data were used for that purpose. The fringe benefit ratios, needed to produce a complete measure of GPO compensation, were more difficult to calculate and could only be roughly estimated using the data currently available.

However, estimates of the noncompensation components of GPO were much more difficult to produce. The Census bridge tables provided SIC/NAICS conversion information for three items: revenues, payroll and employment. None of these items is a direct match to the noncompensation components that needed to be estimated on a NAICS basis. Additionally, as can be seen from Table 2, the share of each of those items corresponding to each NAICS sector may be quite different depending on the structure of the industry. Industries that are very labor intensive, for example, have different receipts-to-employees ratios than do industries that are not labor intensive. Consequently, there was a question about the appropriateness of using any of the census-based bridge data as a proxy for the portions of the noncompensation components of GPO to move.

It was considered a somewhat better strategy to use information about the GPO proxies, items from the IRS SOI tables that are normally used to estimate the split between large and small businesses, to provide information about the distribution of the GPO noncompensation components across industries. Those proxies could be used to make the determination about the share of profit-type income, depreciation and net interest in each of the SIC-based industry groupings that should be reallocated to each of the NAICS sectors. This strategy required two pieces of industry organizational information. The first was the size of each of these components allocated to the portion of the industry to be removed from the NAICS sector being calculated. The second piece of information was the percentage that amount was of the SIC-based GPO category from which it was to be removed.

The ideal set of information from which to make these calculations would have been IRS SOI data for 1998 calculated on both an SIC-basis and on a NAICS-basis. Unfortunately, those data were not available.¹³ Thus, the ability to move industry components based on the IRS data depended on two things: 1) the industry grouping to be moved was well-identified in the IRS statistics and 2) it was possible to approximate from the 1998 IRS statistics the larger SIC grouping of which it had been a part.

As an example, foodservices was previously in retail trade under the SIC classification and is classified under accommodations and foodservices in NAICS. Foodservice is shown as a separate line item in the IRS SOI statistics under the larger NAICS sector heading Accommodations and Foodservices. Therefore, the size of the foodservice components could be determined. But the size of the foodservice components alone was not sufficient information with which to determine how much of the GPO components would need to be moved. Nor was knowing foodservices' share of the new NAICS sector, accommodation and foodservices, going to provide the needed information. Since the GPO data are on an SIC basis, what was needed was the share that foodservices was of the old SIC-based category of which it was a part, in this case retail trade. For the foodservice example this was not a major problem because the changes that had taken place in the trade categories, other than those related to foodservice, were relatively small. Consequently, a reasonably accurate estimate of the old SIC-based retail trade division could be approximated by adding the new NAICS-based retail trade sector totals from the SOI tables to the foodservice totals that were shown under the accommodation and foodservices sector in the SOI tables. Then the share foodservice was of the estimated SIC-based retail trade sector could be determined for each of the SOI proxies. Those shares could be applied to the GPO components to determine the amount of the retail trade category that should be moved to the new accommodations and foodservices sector.¹⁴

¹³ The IRS did produce such tables for BEA. However, because of confidentiality issues those tables could not be released to anyone outside of those agencies.

¹⁴ The IRS statistics provided needed information for business receipts (the proxy for indirect business taxes in the GPO calculations), net income less deficit (the proxy for profit-type income in the GPO calculations) and for depreciation deductions (the proxy for capital consumption in the GPO). The data for interest paid (the proxy for net interest in the GPO calculations) was not always available at the level of industry detail needed for these calculations (although for foodservices it was available.)

This methodology was straightforward for net income and depreciation. However, the GPO components indirect business taxes and net interest were still something of a problem. The proxy for estimating the business-size shares of indirect business taxes is the business receipts share of the SOI data. That is considered a reasonable proxy because many of these indirect taxes are excise taxes that are closely tied to receipts. However, it is less certain that business receipts are a good proxy for determining the distribution of indirect business taxes across industries. Not all of the detailed industries in an aggregated industry grouping pay indirect business taxes, and they don't necessarily pay them at the same rate when they do. Consequently, a distribution based on receipts may not reflect the distribution of tax payments across industries. Nevertheless, there was no other proxy readily available to improve on this estimate so it was used for the calculations. The proxy that is used to divide net interest into firm-size shares was not always available in the data being used for this project. Consequently, another proxy sometimes had to be used to determine the portion of the net interest GPO category to be moved to another sector. The business receipts shares were also used to move net interest if the interest paid proxy was not available for the industry in question.

This type of correction was used for a few of the largest categories for which adjustments needed to be made. In addition to the foodservices adjustment, adjustments were made for publishing, land sub-developers and auto rental and leasing. Attempts were made to move other categories beyond those; however, those attempts were not successful because one of the two required pieces of information could not be calculated. While this was usually the result of difficulties in estimating the size of the old SIC-based category from the new NAICS-based categories available in the IRS statistics, it was sometimes due to a lack of detail in the SOI statistics.

Potential Influences Other than Classification on the Small Business Shares

Any differences between the small business shares calculated on an SIC-industry basis and those calculated on a NAICS-industry basis should be the result of the reclassification of the underlying industrial structure. And if that were true, when all the

industries are added up to private nonfarm GDP, the small business share would not be any different than under the SIC basis. However, in reality, there are reasons other than the industry aggregations (and the associated difficulties of calculating accurate industry aggregations) that are impacting these calculations and influencing the overall share of small business GDP presented in Table 3.

Of the reasons other than industry aggregation that appear to have the most impact, benchmarking may be the most important. GPO business size shares traditionally have been benchmarked to *Enterprise Statistics* (ES) for the compensation components and to the *SOI-Link* for the non-compensation components. There have been exceptions to this, but for the most part these were considered to be the best benchmarks available and thus were considered the best source on which to build the small business estimates. However, neither of those sources of data is available for 1997 or 1998, the only two years in which it is reasonable to attempt to make a NAICS-based estimate of GPO by firm size. Consequently, the normal benchmarks are not available to be used. That means that unbenchmarked shares are being used in these calculations.

Two sets of benchmarks are usually used during the calculation of GDP by firm size. One set produces noncompensation components benchmarked to the levels of the *SOI Link* shares. Table 4 provides a basis for gauging the impact of the benchmarking of the noncompensation shares. On each shaded line of Table 4 is a major SIC division and the 1997 unbenchmarked and benchmarked shares that were used to calculate the SIC-based business size shares of each of the noncompensation components of GPO. The large business share of corporate business receipts determines the cut-off points for the *SOI Corporate Statistics of Income* data. Those cut-off points are then used to calculate the small business shares of the SOI proxies that are used to divide each of the corporate noncompensation components of GPO. Those are shown in the remaining columns of the table. The non shaded rows of the table contain the unbenchmarked shares that are produced directly from using the large business share of corporate receipts to determine cut-off points in the 1998 SOI data (aggregated on a NAICS basis) and calculating the small business share of each of the proxies.

Table 4: Comparison of Benchmarked and Unbenchmarked Shares from 1997 to Unbenchmarked Shares (as Percent of Total) for 1998

	LB Corporate Share Business Receipts		SB Corporate Share Net Income		SB Corporate Share Depreciation		SB Corporate Share Net Interest	
	Actual	Bench- marked	Actual	Bench- marked	Actual	Bench- marked	Actual	Bench- marked
SIC Mining and Manufacturing	78.5	79.8	12.9	14.8	18.0	17.2	13.3	12.8
NAICS Mining and Manufacturing	79.7		11.5		18.6		14.2	
SIC Construction	7.1	10.2	90.6	90.2	94.2	92.8	90.8	86.7
NAICS Construction	6.9		93.2		96.5		93.9	
SIC TCPU	79.7	79.7	4.0	2.1	22.1	21.8	16.0	16.4
NAICS Transportation & Warehousing	67.2		23.0		42.1		31.6	
NAICS Utilities	87.0		13.8		17.6		20.0	
NAICS Information	79.4		-8.0		27.2		22.3	
SIC Trade	38.0	39.2	55.3	60.4	55.7	51.6	53.8	49.7
NAICS Trade	37.8		56.4		56.3		57.9	
SIC FIRE	76.1	78.2	21.6	30.6	49.2	49.0	21.8	
NAICS Finance & Insurance	84.2		22.6		23.9		23.6	
NAICS Real Estate, Rental & Leasing	29.8		76.5		61.3		73.5	
SIC Services	44.3	31.5	54.5	52.4	65.9	65.2	57.5	56.5
NAICS Professional, Technical & Scientific	42.3		42.7		71.4		58.6	
NAICS Administrative & Support & Waste Management	50.9		54.0		50.6		28.6	
NAICS Educational Services	12.5		84.2		87.8		84.4	
NAICS Health & Social Services	35.9		77.9		67.1		47.6	
NAICS Arts & Entertainment	38.9		33.1		75.6		60.0	
NAICS Accommodation and Food Services	53.2		28.6		60.0		54.8	
NAICS Other Services	21.2		70.8		85.7		67.8	

Differences between the 1997 benchmarked and unbenchmarked shares, as shown on the SIC lines, represent potential deviations that could be a result of benchmarking.

Differences between the SIC-based unbenchmarked share and the NAICS-based unbenchmarked shares represent differences that are more likely caused by classification differences or the differences that might come about due to the normal differences in the underlying data distribution between 1997 and 1998.¹⁵ While in most cases the differences between the benchmarked and unbenchmarked shares for 1997 are relatively small, there are a few cases where those differences can be several percentage points. The net income proxies for the trade and FIRE sectors are the most obvious examples. Where the difference in the benchmarked and unbenchmarked shares is relatively large, the use of the 1998 unbenchmarked shares is likely to lead to an estimate that is noticeably different than the estimate that resulted from the use of the benchmarked share in 1997.

The other component that has been benchmarked the past few years is the wages and salaries component of the compensation series. The compensation components of GPO were originally calculated based on the firm-size breakdowns of payroll from *Enterprise Statistics* (ES). That was considered the most accurate firm-size information there was. However, when the *Enterprise Statistics* program was discontinued, the trend for the firm-size share of the wages and salaries component of the GPO was determined from either quinquennial census data or SUSB data. Usually the latter was the data source used. For various reasons the shares calculated from these sources usually did not match the shares that had been calculated from the *Enterprise Statistics* program. To maintain consistency, the level of the shares originally calculated from ES was generally maintained and the other sources were used to trend those shares forward in time. However, since ES is not available for use in calculating the NAICS-based shares, the payroll shares have to be calculated from one of the other sources. SUSB data were used for that purpose since those data were available for 1998 on a NAICS basis. There are industries where the SUSB data provide somewhat different payroll share levels than did the ES. Consequently, when the estimates are calculated based on these shares, the results may be somewhat different than what resulted from the use of the 1997 shares that had been benchmarked to the levels provided by ES.

¹⁵ The IRS also increased the sample size on which the 1998 SOI estimates were based. Some differences in industries may be caused by a change in the sample weights to account for that increased sample size. Since the IRS does not provide a set of bridge tables, a direct comparison of NAICS to SIC is not possible.

Table 5 provides a similar comparison for payroll shares used for the 1998 SIC-based calculations and the SUSB payroll shares on an SIC and NAICS basis. The first column of numbers is based on SUSB converted to an SIC-basis. The second column of numbers is SUSB on a NAICS basis and the third column of numbers is the actual payroll share that was calculated for the SIC-based GPO numbers. Comparing this last column of numbers to the NAICS-based SUSB shares indicates the difference that comes about due to the benchmarking to the *Enterprise Statistics* shares. The largest differences are in the services area and in trade.

Table 5: Comparison of Benchmarked and Unbenchmarked Payroll Shares

	Small Business Share of Payroll		
	SUSB-SIC	SUSB-NAICS	Benchmarked SIC
Mining and Manufacturing	34.9	35.3	31.8
Construction	85.3	85.4	86.9
TCPU	26.9		27.2
Transportation & Warehousing		36.9	
Utilities		11.2	
Information		25.1	
Trade	57.1	55.7	66.6
FIRE	34.4		34.4
Finance & Insurance		28.0	
Real Estate, Rental & Leasing		69.6	
Services	53.8		63.5
Professional, Technical & Scientific		64.7	
Administrative & Support & Waste Management		44.7	
Educational Services		42.0	
Health & Social Services		51.8	
Arts & Entertainment		74.3	
Accommodation and Food Services		56.6	
Other Services		83.4	

Part of the difference in the payroll shares for trade may have to do with the treatment of manufacturing sales branches. In the ES numbers those are allocated to manufacturing because the owning enterprise is a manufacturer. In SUSB, those establishments are in wholesale trade because that is the function they are performing. The comparison in the services industries is somewhat more difficult to determine. While there are no ES data for 1997, there are NAICS-based firm-size tables for the services

industries produced from the censuses. Those allow a comparison between the small business share based on the quinquennial censuses (which is generally relatively close to what the ES shares were) and those being generated from SUSB. As Table 6 below indicates, in all cases the small business share of payroll coming from the census data is larger than it is from the SUSB data. SUSB is benchmarked to *County Business Patterns* rather than the censuses and that may be the cause of the difference seen in these shares. One of the larger differences is in the health care and social assistance sector. That difference is mostly the result of a correction that has been made to remove government hospitals from the census data, a correction that has routinely been made to the ES data since the JPC estimates focus on private industry. Since most of the government hospitals have more than 500 employees, that correction substantially raises the small business share for that sector. The largest difference is in the educational services sector. That difference may reflect a definitional difference in the types of educational services that are being covered in the two data sources.

Table 6: Comparison of Payroll Shares for Services Industries, SUSB and Census Data

NAICS Sector	1998 SUSB	1997 Census
Professional, scientific, & technical services	64.67%	69.00%
Administrative & support & waste	44.72%	47.67%
Educational services	41.96%	89.14%
Health care & social assistance	46.25%	51.86%
Arts, entertainment, & recreation	74.25%	78.54%
Accommodation & food services	56.60%	57.77%
Other services (except public administration)	83.38%	85.06%

Final Comments

Firm-size estimates of NAICS-based GPO estimates will clearly be possible once the GPO data are converted to a NAICS basis in 2004. Further study of some of the benchmarking issues raised in this paper will be necessary to determine the small business shares. While these preliminary share estimates should be used with caution, it is clear that the NAICS-based estimates will provide further insights into the role small businesses are playing in the U.S. economy today.

Appendix A

SIC to NAICS Conversion of GPO

Table 2 in the text, provides a summary of the extent to which the revenue, payroll and employment totals for each NAICS sector are comparable to the SIC division or 2-digit major groups from which they are being constructed. Following is a more detailed version of that table. These tabulations of the detailed industry movements needed to approximate NAICS sectors using SIC data provide a method of gauging how close the GPO estimates are to a true NAICS-based measure of the sector. The table is split into sixteen major 2-digit NAICS groupings. While mining and manufacturing are calculated as a combined sector, they are being shown separately in this table.

Each row in the table represents an industry at the most disaggregated level that the GPO statistics provide (usually a 2-digit SIC industry) and are roughly allocated to the NAICS sector into which the majority of the 2-digit SIC industry would be classified. The finest level of SIC-based industry detail available from the Census is the 4-digit level. Each 2-digit grouping is an aggregation of several 4-digit industries that fall within the hierarchical structure of that industry grouping. The 4-digit industry codes that make up each of the 2-digit GPO categories are allocated to three groups: 1) those that would remain 100% in the 2-digit NAICS sector under which they are listed; 2) those that would be split between the 2-digit NAICS sector under which they are listed and one or more of the other 2-digit NAICS sectors; and 3) those that would be removed entirely from the 2-digit NAICS sector under which they are listed and allocated to one or more of the other major 2-digit NAICS sectors on the list.

On each line consistent with an SIC-based GPO category, the revenues, payroll and employees associated with the 4-digit industries (from groups two and three above) that would be removed from the NAICS sector have been totaled. These totals come from the 1997 quinquennial Censuses and provide an idea of how much of the "old" SIC-based grouping is being moved to other NAICS sectors. Below that total is a list of all the 4-digit SIC codes that are classified in the NAICS sector but are not part of the major SIC-based GPO categories that have been allocated to it. The total of the revenues, payroll

and employees for those SICs are added together. That total can be compared with the NAICS sector total to determine what share of the NAICS sector is coming from outside of the major GPO categories allocated to it.

As can be seen from the table, some industries have had very few changes made to them. The NAICS-based mining industry, for example, has had parts of only three 4-digit SIC categories removed from it and has had no additional 4-digit SIC industries allocated to it that were not already in mining under the SIC classification. Therefore, it has been changed only in a minor way. The NAICS-based manufacturing sector has had parts of several 4-digit SICs allocated to it that were not allocated to the manufacturing sector under the SIC definition, but those industries have added less than 1 percent to the revenues in the manufacturing sector. More significantly, the publishing industries have been removed from the SIC-based manufacturing sector and reallocated to the NAICS-based information sector. Industries moving out of manufacturing account for about 3 percent of the SIC-based manufacturing receipts and almost 5 percent of employment.

Even more significant are the changes to the SIC-based services division. Several of the 2-digit SIC codes previously allocated to the services division are allocated to several different NAICS-based industries and even some of the 4-digit codes are allocated to more than one sector. For example, the 2-digit SIC category, business services (SIC 73), would have only 9 of its 32 4-digit SIC industries remaining totally in the new 2-digit NAICS sector, administrative & support & waste management & remediation services. The remainder of those services have been either divided between this NAICS sector and some of the other NAICS sectors or allocated totally to other 2-digit NAICS sectors. Therefore, a separate calculation, on a GPO basis of the administrative & support & waste management & remediation services industry will not be very accurate. A better estimate can be obtained by combining it and the NAICS sector professional and technical services and making a GPO estimate of those two sectors combined. That combination of the two sectors is shown on Table 2 and even then there are several further adjustments that should be made to more precisely estimate those NAICS sectors.

Table 2-Appendix Version: Comparison of NAICS Sectors to GPO SIC Categories

NAICS 2-digit Sectors	GPO Industry Level of Detail (SIC basis)	4-digit SIC codes that are 100% in this NAICS 2-digit sector	4-digit SIC codes that are partially in this NAICS 2-digit sector	4-digit SIC codes that are 100% outside this NAICS 2-digit sector	4-digit SIC codes that are partially or fully allocated from NAICS sectors outside this one	Revenue (Thousand \$)	Paid Employment (Number)	Payroll (Thousand \$)
21-Mining						173,988,778	509,006	20,798,257
	Metal mining (SIC 10)	1011, 1021, 1031, 1041, 1044, 1094, 1099	1081	none		3,783	41	1,101
	Coal mining (SIC 12)	1221, 1222, 1231, 1241	none	none				
	Oil and gas extraction (SIC 13)	1311, 1321, 1381, 1389	1382	none		518,667	2,907	104,681
	Nonmetallic minerals, except fuels (SIC 14)	1411, 1422, 1423, 1429, 1442, 1446, 1455, 1459, 1474, 1475, 1479, 1499	1481			8,313	62	2,877
	Total moved out of the SIC-based Mining division					530,763	3,010	108,659
	Share of SIC-based Mining division moved to other NAICS sectors					0.3%	0.6%	0.5%
	4-digit codes entering from other sectors				none	0	0	0
	Share of NAICS-based Mining Sector coming from outside the SIC-based Mining division					0.0%	0.0%	0.0%
31-33 Manufacturing						3,842,061,405	16,888,016	572,101,070
	Food and kindred products (SIC 20)	2011, 2013, 2015, 2021, 2022, 2023, 2024, 2026, 2032, 2033, 2034, 2035, 2037, F29, 2038, 2041, 2043, 2044, 2045, 2046, 2047, 2048, 2051, 2052, 2053, 2061, 2062, 2063, 2064, 2066, 2068, 2074, 2075, 2076, 2077, 2079, 2082, 2083, 2084, 2085, 2086, 2087, 2091, 2092, 2095, 2096, 2097, 2098, 2099	none	none				
	Tobacco products (SIC 21)	2111, 2121, 2131, 2141	none	none				
	Textile mill products (SIC 22)	2211, 2221, 2231, 2241, 2251, 2252, 2253, 2254, 2257, 2258, 2259, 2261, 2262, 2269, 2273, 2281, 2282, 2284, 2295, 2296, 2297, 2298, 2299	none	none				
	Apparel and other textile products (SIC 23)	2311, 2321, 2322, 2323, 2325, 2326, 2329, 2331, 2335, 2337, 2339, 2341, 2342, 2353, 2361,	none	none				

Table 2-Appendix Version: Comparison of NAICS Sectors to GPO SIC Categories

NAICS 2-digit Sectors	GPO Industry Level of Detail (SIC basis)	4-digit SIC codes that are 100% in this NAICS 2-digit sector	4-digit SIC codes that are partially in this NAICS 2-digit sector	4-digit SIC codes that are 100% outside this NAICS 2-digit sector	4-digit SIC codes that are partially or fully allocated from NAICS sectors outside this one	Revenue (Thousand \$)	Paid Employment (Number)	Payroll (Thousand \$)
		2369, 2371, 2381, 2384, 2385, 2386, 2387, 2389, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2399						
	Lumber and wood products (SIC 24)	2421, 2426, 2429, 2431, 2434, 2435, 2436, 2439, 2441, 2448, 2449, 2451, 2452, 2491, 2493, 2499	none	2411		13,625,734	83,212	2,014,254
	Furniture and fixtures (SIC 25)	2511, 2512, 2514, 2515, 2517, 2519, 2521, 2522, 2531, 2541, 2542, 2591, 2599	none	none				
	Paper and allied products (SIC 26)	2611, 2621, 2631, 2652, 2663, 2655, 2656, 2657, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679						
	Printing and publishing (SIC 27)	2732, 2752, 2754, 2759, 2761, 2782, 2789, 2791, 2796	2771	2711, 2721, 2731, 2741		116,285,304	730,292	24,705,411
	Chemicals and allied products (SIC 28)	2812, 2813, 2816, 2819, 2821, 2822, 2823, 2824, 2833, 2834, 2835, 2836, 2841, 2842, 2843, 2844, 2851, 2861, 2865, 2869, 2873, 2874, 2875, 2879, 2891, 2892, 2893, 2895, 2899	none	none				
	Petroleum and coal products (SIC 29)	2911, 2951, 2952, 2992, 2999	none	none				
	Rubber and miscellaneous plastics products (SIC 30)	3011, 3021, 3052, 3053, 3061, 3069, 3081, 3082, 3083, 3084, 3085, 3086, 3087, 3088, 3089	none	none				
	Leather and leather products (SIC 31)	3111, 3131, 3142, 3143, 3144, 3149, 3151, 3161, 3171, 3172, 3199	none	none				
	Stone, clay, and glass products (SIC 32)	3211, 3221, 3229, 3231, 3241, 3251, 3253, 3255, 3259, 3261, 3262, 3263, 3264, 3269, 3271, 3272, 3273, 3274, 3275, 3281, 3291, 3292, 3295, 3296, 3297, 3299	none	none				
	Primary metal industries (SIC 33)	3312, 3313, 3315, 3316, 3317, 3321, 3322, 3324, 3325, 3331, 3334, 3339, 3341, 3351, 3353, 3354, 3355, 3356, 3357, 3363, 3364, 3365, 3366, 3369, 3398, 3399	none	none				
	Fabricated metal products (SIC 34)	3411, 3412, 3421, 3423, 3425, 3429, 3431, 3432, 3433, 3441,	none	none				

Table 2-Appendix Version: Comparison of NAICS Sectors to GPO SIC Categories

NAICS 2-digit Sectors	GPO Industry Level of Detail (SIC basis)	4-digit SIC codes that are 100% in this NAICS 2-digit sector	4-digit SIC codes that are partially in this NAICS 2-digit sector	4-digit SIC codes that are 100% outside this NAICS 2-digit sector	4-digit SIC codes that are partially or fully allocated from NAICS sectors outside this one	Revenue (Thousand \$)	Paid Employment (Number)	Payroll (Thousand \$)
		3442, 3443, 3444, 3446, 3448, 3449, 3451, 3452, 3462, 3463, 3465, 3466, 3469, 3471, 3479, 3482, 3483, 3484, 3489, 3491, 3492, 3493, 3494, 3495, 3496, 3497, 3498, 3499	none	none				
	Industrial machinery and equipment (SIC 35)	3511, 3519, 3523, 3524, 3531, 3532, 3533, 3534, 3535, 3536, 3537, 3541, 3542, 3543, 3544, 3545, 3546, 3547, 3548, 3549, 3552, 3553, 3554, 3555, 3556, 3559, 3561, 3562, 3563, 3564, 3565, 3566, 3567, 3568, 3569, 3571, 3572, 3575, 3577, 3578, 3579, 3581, 3582, 3585, 3586, 3589, 3592, 3593, 3594, 3596, 3599	none	none				
	Electronic and other electric equipment (SIC 36)	3612, 3613, 3621, 3624, 3625, 3629, 3631, 3632, 3633, 3634, 3635, 3639, 3641, 3643, 3644, 3645, 3646, 3647, 3648, 3651, 3652, 3661, 3663, 3669, 3671, 3672, 3674, 3675, 3676, 3677, 3678, 3679, 3691, 3692, 3694, 3695, 3699	none	none				
	Motor vehicles and equipment (SIC 371)	3711, 3713, 3714, 3715, 3716	none	none				
	Other transportation equipment (SIC 372-379)	3721, 3724, 3728, 3731, 3743, 3751, 3761, 3764, 3769, 3792, 3795, 3799	3732	none		821,273	9,464	240,915
	Instruments and related products (SIC 38)	3812, 3821, 3822, 3823, 3824, 3825, 3826, 3827, 3829, 3841, 3842, 3843, 3844, 3845, 3851, 3861, 3873	none	none				
	Miscellaneous manufacturing industries (SIC 39)	3911, 3914, 3915, 3931, 3942, 3944, 3949, 3951, 3952, 3953, 3955, 3961, 3965, 3991, 3993, 3995, 3996, 3999	none	none				
	Total moved out of the SIC-based Manufacturing division					130,732,311	822,968	26,960,580
	Share of SIC-based Manufacturing division moved to other NAICS sectors					3.3%	4.7%	4.5%

Table 2-Appendix Version: Comparison of NAICS Sectors to GPO SIC Categories

NAICS 2-digit Sectors	GPO Industry Level of Detail (SIC basis)	4-digit SIC codes that are 100% in this NAICS 2-digit sector	4-digit SIC codes that are partially in this NAICS 2-digit sector	4-digit SIC codes that are 100% outside this NAICS 2-digit sector	4-digit SIC codes that are partially or fully allocated from NAICS sectors outside this one	Revenue (Thousand \$)	Paid Employment (Number)	Payroll (Thousand \$)
	4-digit codes entering from other sectors				5131, 5147, 5441, 5461, 5699, 5712, 7379, 7534, 7694, 7819, 8072	14,743,282	153,966	3,375,864
	Share of NAICS-based Manufacturing Sector coming from outside the SIC-based Manufacturing division					0.4%	0.9%	0.6%
22 Utilities	Electric, gas, and sanitary services (SIC 49)	4911, 4924, 4925, 4931, 4932, 4939, 4941, 4952, 4961, 4971	4923	4922, 4953, 4959		411,713,327	702,703	36,594,684
	Total moved out of SIC-based Electric, Gas and Sanitary Services group					36,196,877	133,214	5,291,529
	Share of SIC-based Electric, Gas and Sanitary moved to other NAICS sectors					8.1%	15.9%	12.6%
	Share of NAICS-based Utilities Sector coming from outside the SIC-based Electric, Gas and Sanitary Services				none	0%	0%	0%
23 Construction	Construction (SIC 15-17)	1521, 1522, 1531, 1541, 1542, 1611, 1622, 1623, 1629, 1711, 1721, 1731, 1741, 1742, 1743, 1751, 1752, 1761, 1771, 1781, 1791, 1793, 1794, 1795, 1796	1799	none		868,581,046	5,664,840	174,184,604
	Total moved out of the SIC-based Construction division					1,518,864	18,675	545,024
	Share of SIC-based Construction moved to other NAICS sectors					0.2%	0.3%	0.3%
	4-digit industries entering from other sectors				6552, 7353, 8741	25,304,981	173,226	3,767,624
	Share of NAICS-based Construction Sector					2.9%	3.1%	2.2%

Table 2-Appendix Version: Comparison of NAICS Sectors to GPO SIC Categories

NAICS 2-digit Sectors	GPO Industry Level of Detail (SIC basis)	4-digit SIC codes that are 100% in this NAICS 2-digit sector	4-digit SIC codes that are partially in this NAICS 2-digit sector	4-digit SIC codes that are 100% outside this NAICS 2-digit sector	4-digit SIC codes that are partially or fully allocated from NAICS sectors outside this one	Revenue (Thousand \$)	Paid Employment (Number)	Payroll (Thousand \$)
	coming from outside the SIC-based Construction							
48-49 Transportation & Warehousing						315,840,905	2,897,012	81,562,484
	Railroad transportation (SIC 40)	4011, 4013	none	none		0	0	0
	Local and interurban passenger transit (SIC 41)	4111, 4121, 4131, 4141, 4142, 4151, 4173	4119	none		4,443,174	106,354	1,980,156
	Trucking and warehousing (SIC 42)	4213, 4214, 4215, 4221, 4222, 4226, 4231	4212, 4225	none		22,670,327	171,417	4,861,990
	Water transportation (SIC 44)	4412, 4424, 4432, 4449, 4481, 4482, 4489, 4491, 4492	4499	4493		2,995,873	24,422	582,546
	Transportation by air (SIC 45)	4512, 4513	4522, 4581	none		788,147	10,715	206,266
	Pipelines, except natural gas (SIC 46)	4612, 4613, 4619	none	none				
	Transportation services (SIC 47)	4783, 4785, 4789	4729, 4731	4724, 4725, 4741		19,984,145	246,168	6,487,760
	Total moved out of the SIC-based Transportation					50,881,666	559,076	14,118,718
	Share of SIC-based Transportation moved to other NAICS sectors					14.7%	16.4%	15.1%
	4-digit industries entering from other sectors				7549, 7699, 7999	2,656,389	41,183	829,492
	Share of NAICS-based Trucking and Warehousing Sector coming from outside the SIC-based Transportation groups					0.8%	1.4%	1.0%
51 Information								
	Telephone and telegraph (SIC 481,482,489)	4812, 4822	4813, 4899	none		623,268,429	3,064,418	129,459,486
	Radio and television (SIC 483-484)	4832, 4833, 4841	none	none		2,864,290	15,588	538,115
	Motion pictures (SIC 78)	7829, 7832, 7833	7819, 7822	7841		23,162,458	316,635	5,473,730
	Total moved out of the SIC-based Communications & motion picture industry					26,026,748	332,223	6,011,845

Table 2-Appendix Version: Comparison of NAICS Sectors to GPO SIC Categories

NAICS 2-digit Sectors	GPO Industry Level of Detail (SIC basis)	4-digit SIC codes that are 100% in this NAICS 2-digit sector	4-digit SIC codes that are partially in this NAICS 2-digit sector	4-digit SIC codes that are 100% outside this NAICS 2-digit sector	4-digit SIC codes that are partially or fully allocated from NAICS sectors outside this one	Revenue (Thousand \$)	Paid Employment (Number)	Payroll (Thousand \$)
	Share of SIC-based Communications & Motion Picture groups moved to other NAICS sectors					6.2%	16.4%	7.7%
	4-digit industries entering from other sectors				2711, 2721, 2731, 2741, 2771, 7331, 7372, 7374, 7375, 7383, 7389, 7922, 8231, 8999	232,167,091	1,375,496	57,699,468
	Share of NAICS-based Information Sector coming from outside the SIC-based Communications and Motion Picture groups					37.2%	44.9%	44.6%
41-46 Trade								
	Wholesale trade (SIC 50-51)	5012, 5013, 5014, 5015, 5021, 5023, 5031, 5032, 5033, 5039, 5043, 5044, 5045, 5046, 5047, 5048, 5049, 5051, 5052, 5063, 5064, 5065, 5072, 5074, 5075, 5078, 5082, 5083, 5084, 5085, 5087, 5088, 5091, 5092, 5093, 5094, 5099, 5111, 5112, 5113, 5122, 5136, 5137, 5139, 5141, 5142, 5143, 5144, 5145, 5146, 5148, 5149, 5153, 5154, 5159, 5162, 5169, 5171, 5172, 5181, 5182, 5191, 5192, 5193, 5194, 5198	5131, 5147, 5199	0		6,520,543,790	19,787,660	452,110,908
	Retail trade (SIC 52-59)	5211, 5231, 5251, 5261, 5271, 5311, 5331, 5399, 5411, 5421, 5431, 5451, 5499, 5511, 5521, 5531, 5541, 5551, 5561, 5571, 5599, 5611, 5621, 5632, 5641, 5651, 5661, 5713, 5719, 5722, 5731, 5734, 5735, 5736, 5912, 5921, 5941, 5942, 5943, 5944, 5945, 5946, 5947, 5948, 5949, 5961, 5962, 5963, 5984, 5989, 5992, 5993, 5994, 5999	5441, 5461, 5699, 5712, 5714, 5932, 5963, 5995	5812, 5813		258,067,467	7,856,204	71,930,302
	Total moved out of the SIC-based Trade divisions							
	Share of SIC-based Trade divisions moved to other					4.0%	28.5%	13.9%

Table 2-Appendix Version: Comparison of NAICS Sectors to GPO SIC Categories

NAICS 2-digit Sectors	GPO Industry Level of Detail (SIC basis)	4-digit SIC codes that are 100% in this NAICS 2-digit sector	4-digit SIC codes that are partially in this NAICS 2-digit sector	4-digit SIC codes that are 100% outside this NAICS 2-digit sector	4-digit SIC codes that are partially or fully allocated from NAICS sectors outside this one	Revenue (Thousand \$)	Paid Employment (Number)	Payroll (Thousand \$)
	NAICS sectors							
	4-digit industries entering from other sectors				7822	7,821,716	10,563	350,269
	Share of NAICS-based Trade sectors coming in from outside the SIC-based Trade divisions					0.12%	0.05%	0.08%
52 Finance & Insurance						2,197,771,283	5,835,214	264,551,401
	Depository institutions (SIC 60)	6011, 6019, 6021, 6022, 6035, 6036, 6061, 6062, 6081, 6091, 6099	6082	none		8,585	26	1,809
	Nondepository institutions (SIC 61)	6111, 6141, 6153, 6159, 6162, 6163	none	none				
	Security and commodity brokers (SIC 62)	6211, 6221, 6231, 6282, 6289	none	none				
	Insurance carriers (SIC 63)	6311, 6321, 6324, 6331, 6351, 6361, 6371, 6399	none	none				
	Insurance agents, brokers, and service (SIC 64)	6411	none	none				
	Total moved out of SIC-based Finance & Insurance groups					8,585	26	1,809
	Share of SIC-based Finance & Insurance moved to other NAICS sectors					0.0%	0.0%	0.0%
	4-digit industries entering from other sectors				5932, 6733, 6792, 6798, 6799, 7389	41,551,292	118,825	4,250,242
	Share of NAICS-based Finance & Insurance Sector coming from outside SIC-based Finance & Insurance					1.9%	2.0%	1.6%
53 Real Estate & Rental & Leasing						240,917,556	1,702,420	41,590,766
	Real estate (SIC 65)	6513, 6514, 6515, 6517, 6519	6512, 6531	6541, 6552, 6553		29,315,248	241,499	5,811,035
	Total moved out of SIC-					29,315,248	241,499	5,811,035

Table 2-Appendix Version: Comparison of NAICS Sectors to GPO SIC Categories

NAICS 2-digit Sectors	GPO Industry Level of Detail (SIC basis)	4-digit SIC codes that are 100% in this NAICS 2-digit sector	4-digit SIC codes that are partially in this NAICS 2-digit sector	4-digit SIC codes that are 100% outside this NAICS 2-digit sector	4-digit SIC codes that are partially or fully allocated from NAICS sectors outside this one	Revenue (Thousand \$)	Paid Employment (Number)	Payroll (Thousand \$)
	based Real Estate group					16.3%	18.0%	17.4%
	Share of SIC-based Real Estate group moved to other NAICS sectors							
	4-digit industries entering from other sectors				4225, 4499, 4741, 6792, 6794, 7299, 7352, 7353, 7359, 7377, 7513, 7514, 7515, 7519, 7819, 7841, 7922, 7999	90,168,303	603,844	13,939,692
	Share of NAICS-based Real Estate Rental & Leasing Sector coming from outside the SIC-based Real Estate group					37.4%	35.5%	33.5%
54 & 56 Professional, Scientific, & Technical Services and Administrative Support & Waste Management & Remediation Services							12,708,576	368,735,774
	Legal services (SIC 81) Other services (SIC 84,87)	8111 8711, 8712, 8713, 8721, 8731, 8732, 8733, 8734, 8742,8743, 8744	none 8741, 8748	none 8412, 8422		16,923,846	146,842	3,782,687
	Business services (SIC 73)	7311, 7312, 7313, 7319, 7322, 7323, 7334, 7335, 7336, 7338, 7342, 7349, 7361, 7363, 7371, 7373, 7376, 7381, 7382	7331, 7359, 7389	7352, 7353, 7372, 7374, 7375, 7377, 7378, 7379, 7383, 7384		163,316,529	1,007,757	43,838,503
	Total moved out of the SIC-based Legal, Business and Other Services groups					180,240,375	1,154,599	47,621,190
	Share of SIC-based Legal, Business and Other Services groups moved to other NAICS sectors					18.5%	9.1%	12.3%

Table 2-Appendix Version: Comparison of NAICS Sectors to GPO SIC Categories

NAICS 2-digit Sectors	GPO Industry Level of Detail (SIC basis)	4-digit SIC codes that are 100% in this NAICS 2-digit sector	4-digit SIC codes that are partially in this NAICS 2-digit sector	4-digit SIC codes that are 100% outside this NAICS 2-digit sector	4-digit SIC codes that are partially or fully allocated from NAICS sectors outside this one	Revenue (Thousand \$)	Paid Employment (Number)	Payroll (Thousand \$)
	4-digit industries entering from other sectors				1081, 1382, 1481, 1799, 4212 4581, 4724, 4725, 4729, 4731, 4813, 4953, 4959, 5199, 6541, 7217, 7221, 7291, 7699, 7819, 7922, 7999, 8099, 8699, 8999	94,859,528	1,149,826	27,767,960
	Share of NAICS-based Prof & Tech, Admin & Waste Management sectors coming from outside the SIC industries 73, 81, 84, 87					10.6%	9.0%	7.5%
55 Management of Companies and Enterprises	Holding and Other Investment Offices (SIC 67)	6712, 6719	none	6722, 6726, 6732, 6733, 6792, 6794, 6798, 6799		92,473,059	2,614,527	154,177,673
	Total moved out of the SIC-based Holding and Other Investment group					76,162,201	132,027	5,299,771
	Share of SIC-based Holding and Other Investment Offices group moved to other NAICS sectors					76,162,201	132,027	5,299,771
	Amount entering from other NAICS sectors			Corporate offices		29,975,818	2,491,698	145,086,214
	Share of NAICS-based Management of Companies and Enterprises coming from outside the SIC-based Holding and Other Investment Offices							
61 Educational Services	Educational services (SIC 82)	8243, 8244, 8249, 8299	none	8231		20,412,870	320,472	6,356,002
						860,933	22,044	373,164

Table 2-Appendix Version: Comparison of NAICS Sectors to GPO SIC Categories

NAICS 2-digit Sectors	GPO Industry Level of Detail (SIC basis)	4-digit SIC codes that are 100% in this NAICS 2-digit sector	4-digit SIC codes that are partially in this NAICS 2-digit sector	4-digit SIC codes that are 100% outside this NAICS 2-digit sector	4-digit SIC codes that are partially or fully allocated from NAICS sectors outside this one	Revenue (Thousand \$)	Paid Employment (Number)	Payroll (Thousand \$)
	Total moved out of the SIC-based Educational Services					860,933	22,044	373,164
	Share of SIC-based Educational Services moved to other NAICS sectors					5.2%	8.9%	7.0%
	4-digit codes moved in from other sectors				7231, 7241, 7911, 7999, 8748	4,742,016	95,248	1,407,730
	Share of NAICS-based Educational Services sector coming from outside the SIC-based Educational Services					23.2%	29.7%	22.1%
62 Health Care & Social Assistance						885,054,001	13,561,579	378,205,694
	Health services (SIC 80)	8011, 8021, 8031, 8041, 8042, 8043, 8049, 8062, 8063, 8069, 8071, 8082, 8092, 8093	8099	8072		3,019,894	41,476	1,034,161
	Social services (SIC 83)	8322, 8331, 8351, 8361	none	8399		23,587,516	143,281	3,777,763
	Total moved out of the SIC-based Health and Social Services groups					26,607,410	184,757	4,811,924
	Share of SIC-based Hlth and Soc. Services moved to other NAICS sectors					2.9%	1.4%	1.3%
	4-digit codes moved in from other sectors				4119, 4522, 7299, 8641	7,121,657	163,198	2,954,209
	Share of NAICS-based Health and Soc. Services sector coming from outside SIC-based Hlth and Soc. Services					0.8%	1.2%	0.8%
71 Arts, Entertainment & Recreation						104,715,028	1,587,660	32,787,273
	Amusement and recreation services (SIC 79)	7929, 7933, 7941, 7948, 7991, 7992, 7993, 7996, 7997	7911, 7922, 7999	none		4,857,866	96,881	1,308,011

Table 2-Appendix Version: Comparison of NAICS Sectors to GPO SIC Categories

NAICS 2-digit Sectors	GPO Industry Level of Detail (SIC basis)	4-digit SIC codes that are 100% in this NAICS 2-digit sector	4-digit SIC codes that are partially in this NAICS 2-digit sector	4-digit SIC codes that are 100% outside this NAICS 2-digit sector	4-digit SIC codes that are partially or fully allocated from NAICS sectors outside this one	Revenue (Thousand \$)	Paid Employment (Number)	Payroll (Thousand \$)
	Total moved out of the SIC-based Amusement and Recreation Services					4,857,866	96,881	1,308,011
	Share of SIC-based Amusement and Rec. Services moved to other NAICS sectors					5.1%	6.3%	4.4%
	4-digit codes moved in from other sectors				4493, 5812, 6512, 7389, 7819, 8412, 8422, 8999	13,769,499	141,918	4,298,439
	Share of NAICS-based Arts and Entertainment coming from outside the SIC-based Amusement and Recreation Services					13.1%	8.9%	13.1%
72 Accommodation and Foodservices	Hotels and other lodging places (SIC 70)	7011, 7021, 7032, 7033, 7041	none	none		350,396,624	9,451,161	97,005,993
	4-digit codes moved in from other sectors				5461, 5812, 5813, 5963	251,941,763	7,754,567	70,333,544
	Share of NAICS-based Accommodation and Foodservices coming from outside the SIC-based Hotels and Lodging places					71.9%	82.0%	72.5%
81 Other Services (except public administration)	Services (except public administration)					265,897,685	3,256,178	65,520,115
	Personal services (SIC 72)	7211, 7212, 7213, 7215, 7216, 7218, 7219, 7251, 7261	7231, 7241, 7299	7217, 7221, 7291		9,294,250	285,255	2,848,390
	Auto repair, services, and parking (SIC 75)	7521, 7532, 7533, 7536, 7537, 7538, 7539, 7542	7534, 7549	7513, 7514, 7515, 7519		32,199,645	202,846	4,810,343
	Miscellaneous repair services (SIC 76)	7622, 7623, 7629, 7631, 7641, 7692	7694, 7699	none		3,266,676	41,477	1,029,678
	Membership organizations (SIC 86)	8611, 8621	8641, 8699	none		4,074,959	76,209	1,507,268
	Total moved out of the					48,835,530	605,787	10,195,679

Table 2-Appendix Version: Comparison of NAICS Sectors to GPO SIC Categories

NAICS 2-digit Sectors	GPO Industry Level of Detail (SIC basis)	4-digit SIC codes that are 100% in this NAICS 2-digit sector	4-digit SIC codes that are partially in this NAICS 2-digit sector	4-digit SIC codes that are 100% outside this NAICS 2-digit sector	4-digit SIC codes that are partially or fully allocated from NAICS sectors outside this one	Revenue (Thousand \$)	Paid Employment (Number)	Payroll (Thousand \$)
	SIC-based Personal, Auto, Misc and Membership Services							
	Share of SIC 72,75,76,86 moved to other					20.9%	17.6%	15.8%
	4-digit codes moved in from other sectors							
	Share of NAICS-based Other Services coming from outside the SICs 72, 75, 76, 86				3732, 4899, 6531, 6553, 6732, 7378, 8399	80,528,456	426,657	11,074,528
						30.3%	13.1%	16.9%

Appendix B

Projection of the Small Business Share of GDP over the Next Decade

The small business share of private nonfarm GDP has been relatively constant over the past decade. However, that stability has been largely the result of strong growth in small-business dominated industries offsetting a decline in the small-business share within specific industries. Will the trends that have characterized small business' role in economic growth continue? This question can not be answered with any precision especially given the uncertainties in the current economic cycle. However using projections of industry hours growth produced by the Bureau of Labor Statistics (BLS), some estimates can be made of the role small business may play in the U.S. economy by the end of the decade. If the small business share of individual industries were to stabilize at the preliminary levels estimated for 1999, then stronger growth in the services industries' hours relative to the economy overall could increase the small business share of the private nonfarm economy by about a percentage point by 2010. This result, of course, is based on numerous simplifying assumptions but basically assumes that compensation growth by industry will parallel hours growth.¹⁶

This estimated increase in the small business share for the economy assumes an end to another long-term trend. Over time the small business share of many industry sectors has been declining. Even the services sector, one of the bulwarks of small business, has shown a small decline in the share of its GDP produced by small business between 1990 and 1999. Is it reasonable to assume that the small business shares of individual industries will stabilize over the next decade? While this is a difficult question to answer, it is unlikely that in a dynamic economy the small business share of each industry will remain totally unchanged. However, there is some information that will provide a sense of what these changes might be like.

¹⁶ Differences in the growth of hourly wages across different industries tend to be more consistent than is the growth in hours. However, there are differences in hourly compensation growth that would also impact the relative growth of industries and thus could impact the small business share calculation for the economy as a whole.

Every two years, the Bureau of Labor Statistics projects employment and hours growth over the upcoming decade. The most recent projections were published in December 2001 for the period through 2010.¹⁷ These projections provide a starting point by which the change in the small business share by industry can be gauged. Overall, BLS is expecting somewhat slower growth in hours during the 2000 to 2010 period than has been experienced during the past five years. Annual growth in hours averaged about 2.2 percent per year between 1995 and 2000 but will slow to about 1.4 percent per year based on the BLS projections. The growth in hours expected for individual industries will also be slower than they were during the 1995-2000 period except for manufacturing. After a long downward trend in manufacturing hour, the BLS sees a small positive gain in the manufacturing sector. However, for determining the relative growth in small business GDP, the relative growth in industries is more important than the absolute growth in hours overall or by industry. In general, the trends BLS expects in hours growth will continue the trends that have been seen during the past decade. The most important, for the continued well being of small business, is the continuation of stronger than average growth in the service-producing side of the economy, especially in the services industries.

The more detailed the long-term projections, the more variable are likely to be the results. This is especially true given the recent economic climate. Recent experience shows that some rapidly growing industries may experience sudden pauses in their growth cycles that can make ten-year projections less than reliable. However, the hours projections do exist by industry and hours will determine a large part of compensation growth which in turn will determine a significant part of GDP growth. Therefore, it is possible to draw some conclusions about the relative growth of small and large-dominated groupings of industries for each major industry sector.¹⁸

¹⁷ These BLS projections were completed prior to the September 11th terrorist attacks and the resulting economic fallout. Consequently, the projections by industry and by occupation may have more variability than is the usual case.

¹⁸ A further complication is the issue of industrial classification. On a forward-looking basis, it would be preferable to know what will happen to industry aggregations on a NAICS (North American Industrial Classification System) basis. This is the new classification system on which all U.S. industry-related statistics will eventually be based; it provides a better view of the service-producing side of the economy than does the old SIC classification system. Currently, however, the statistical agencies are in a transition period where only some of the statistics have been converted to a NAICS basis. This means that the BLS' employment projections by industry are still aggregated using the old SIC system. This requires a conversion to an approximate NAICS basis in order to draw conclusions about NAICS industries.

The following table shows a breakdown by major NAICS sector of the change in the share of hours allocated to small business and large business dominated industries in the 2000 and 2010 time periods. These can not be considered to be the actual small and large business employment shares for these industries since each industry has a small and large business component to it as well. Nor can they provide a precise estimate of the change in the small business share of employment over this time period. As business-size shifts over time, any of these industries could shift from being small-business dominated to large business dominated or vice versa. However, this comparison does provide a basis for gauging how likely it is that the industry assumption underlying the calculation for the entire private nonfarm economy will come true. The table indicates a relatively

Share of Total Hours in Small Business Dominated Industries in 2000 and 2010 based on BLS Employment Projections		
NAICS Industry Sector	2000	2010
Mining and Manufacturing	35.5	35.8
Utilities	25.4	35.0
Construction	100.0	100.0
Trade	100.0	100.0
Transportation and Warehousing	69.1	67.0
Information	8.5	8.1
Finance and Insurance	13.9	14.6
Real Estate, Rental and Leasing	90.9	90.9
Professional, Scientific and Technical Services	100.0	100.0
Administrative, Support Waste Management and Remediation	51.6	47.2
Education Services	0.0	0.0
Health and Social Assistance	69.6	73.2
Art, Entertainment and Recreation	100.0	100.0
Food and Accommodation Services	79.0	79.8
Other Services	100.0	100.0

stable picture for the small-business dominated industries in many cases. Mining and manufacturing's small business dominated industries remain relatively unchanged with a little over a third of total hours. The large jump in utilities is based on a projected increase in the water and sanitary services industries. That change may be showing up in the wrong industry since part of the sanitary services that are classified in the utilities sector under the SIC have been moved to waste management services under NAICS. Unfortunately, the BLS industry data are not detailed enough to determine in which of the detailed industries within this SIC sub-grouping this increase in hours is expected to take place.

Many of the services industries show continued growth. The health and social assistance industries are showing a significant increase in the share of hours associated with small business dominated industries. That reflects an increase in industries such as home health care and residential care that are expected to care for a growing population of elderly. The trade sector is very aggregated in the BLS statistics and consequently, little information can be gleaned about the changes anticipated for this sector over the next decade. Trade has historically been a small business dominated industry and based on the NAICS-based estimate for 1998 is still over 60 percent small business. That share has remained relatively stable since 1990 but is down about 10 percentage points from where it was in the early 1980s. The future of this industry is perhaps more unclear than many of the other major industrial sectors due to the growth in the super-store concept and its impact on small businesses. But, the trade sector has always been a dynamic one that has provided a start for many small entrepreneurs and it is expected to remain a small business dominated industry over the coming decade.

Only three of the major industry sectors in NAICS are showing a decline in the expected share of hours in small business dominated industries. Those are information, where the change in the share is relatively small, and transportation and warehousing sector and administrative, support, waste management and remediation services sector where the change in the shares is somewhat larger.

While it may not be reasonable to assume that the small business share of each of these industries will remain stable for a decade, these numbers indicate that small businesses will continue to hold their own in most of these industry sectors. Thus, ten years from now small businesses will probably account for about as much of economic output as they do today.

The above analysis is based on hours alone. Compensation growth by industry is impacted by two factors. The first is the growth and changing distribution of hours worked in the economy. The second is the growth and relative change in hourly wages by industry. There is generally more variation between industries when comparing their growth in hours than there is when comparing their growth in hourly compensation. For example during the period from 1995 to 2000, hours worked in mining and manufacturing have shown a small decline, while those in services and construction have increased by 20 percent or more. The other industries have increased at a pace that is closer to the average increase of the economy, 12-13 percent. Whereas if one compares the rate of increase in the BLS average hourly earnings for these major sectors over this time period the growth rates vary from 13 percent to 23 percent, a somewhat smaller range of difference.

An analysis of changes in compensation by industry would be interesting and would provide a better handle on the small business share projections discussed above. Since such a complex analysis of compensation trends by detailed industry is beyond the scope of this study, the hours trends are the focus of this analysis. However, a brief summary of possible influences on the hourly wage numbers will help provide a better understanding of the possible influence trends in those numbers could have on these projections. The most well known hourly wage numbers are those produced by BLS. However, there is a large percentage of the hours worked in the economy that are not covered by those wages. Specifically, it does not cover supervisory personnel or a large percentage of the management personnel in the U.S. economy. Based on a simple comparison of the BEA estimates of wage and salary growth by industry with the industry growth patterns seen in the BLS' average hourly earnings series, it can be seen that this can cause some significant differences. There can also be definitional differences

between these two series. For example bonuses are not included in the average hourly earnings numbers but are in the BEA estimates. Thus wage growth in the finance industry, which traditionally gives many of its employees large annual bonuses, may be significantly different using the BEA and the BLS statistics. The GDP by industry data are based on the BEA's compensation numbers. Consequently, it is useful to remember that these sorts of differences could impact the growth rates discussed above.