

Services: business demand rivals consumer demand in driving job growth

The services division, a part of the service-producing sector, contributed more than half of U.S. job growth between 1988 and 2000; rising demand from enterprises was key

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More than 97 percent of the jobs added to U.S. payrolls in approximately the last 12 years were provided by the service-producing sector. That sector is divided into six major divisions of industries, including: *transportation, communications, and public utilities; wholesale trade; retail trade; finance, insurance, and real estate; services; and government.* (See chart 1.) Just one of the six divisions, services—which includes such diverse industries as healthcare, entertainment, temp agencies, and business consulting—gained considerably more than half the jobs added to the U.S. economy and became the largest division by far. As late as 1984, the numbers of jobs in the manufacturing, retail trade, government, and services divisions were reasonably comparable. By 1999, services had about twice the employment of manufacturing or government and about one and three-quarters times the number of jobs in retail trade.¹

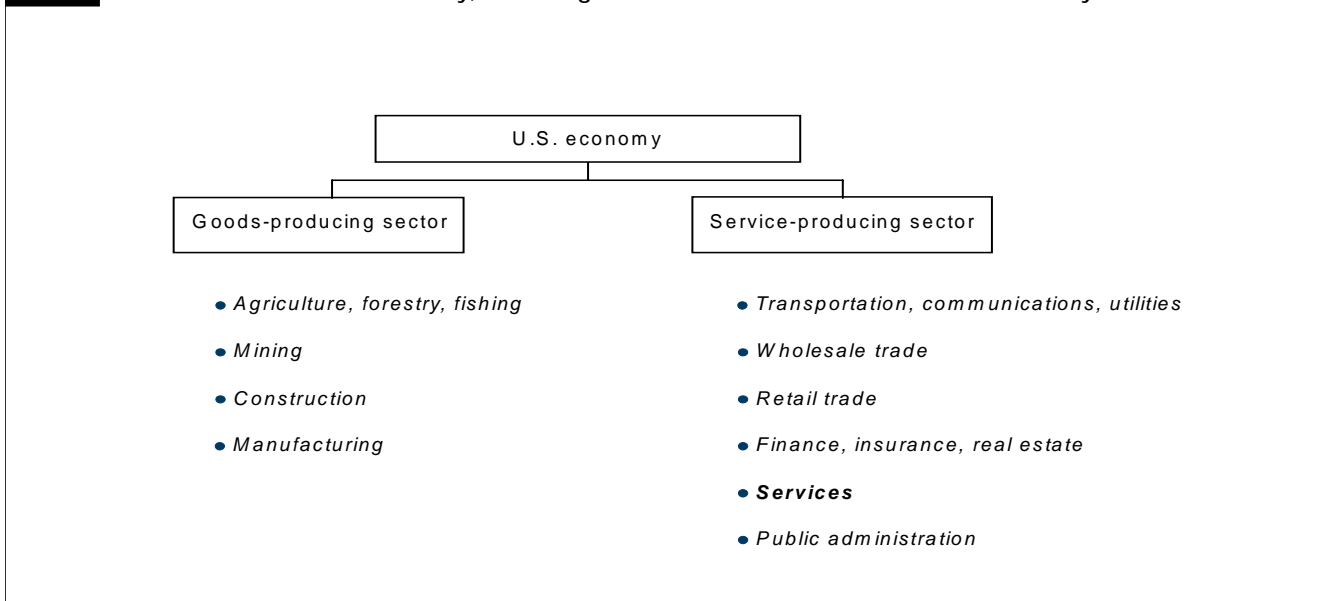
This article is concerned with the question of why the services division gained so many jobs. The long-term upward trend of services jobs and its causes are the major subjects of this article; cyclical effects are not addressed. One way of approaching the present subject is to trace the demand for the services provided by the division. “Input-output” analy-

sis is concerned fundamentally with producers’ requirements for goods and services in order to produce other goods and services. Input-output analysis is used in this article to quantify purchases of the relevant services by the various industries of our economy and by the sources of final demand, such as government, international trade, and personal consumption.² This article first describes job growth as distributed among the various industries of the services division. To explain job growth, the sales of the various services are broken down by type of purchaser. In each major group of industries within the services division, the greatest source of demand turns out to be either personal consumption or producers’ needs. Various economic, demographic, political, and social changes that increase demand for certain services are described; so are certain restraints on the growth of particular services.

The major services industries are each characterized as primarily consumer-oriented, primarily business-oriented, or mixed, in accordance with the quantities of demand from business and consumer. Job trends in the three *totals* of business-oriented industries, consumer-oriented industries, and mixed industries are then analyzed in the context of certain social, economic, and political trends.

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Chart 1. The divisions of the U.S. economy, according to the 1987 Standard Industrial Classification system



The services division

The main groups of industries in the services division are:³

- certain agricultural services (including, most importantly, landscaping and horticulture)
- hotels and other lodging places
- personal services (such as dry cleaning, hairstyling, and tax preparation)
- business services (such as temp agencies and computer software)
- automotive services
- miscellaneous repairs
- motion pictures
- amusements and recreation
- healthcare
- legal services
- private education
- social services
- museums, botanical gardens, and zoos
- membership organizations (such as associations or churches)
- engineering and management services (including consulting)
- miscellaneous services

A clear-cut *conceptual* definition of the services division is problematic, as the services included are diverse in nature. Actually, the division is a miscellaneous category consisting of those parts of the services sector not claimed by other divisions such as retail trade or government. In fact, the ser-

vices division is sometimes labeled as “other services.” The economic activities of the division may be primarily physical (for example, repairs); intellectual (example: education); aesthetic (examples: art museums and performance); or otherwise of experiential value (for example, recreation). Service-producing industries may function by changing a physical object (as in auto repairs); the consumer’s self (examples: healthcare and education); an organization (for example, management consulting); or may have no such readily apparent object (as in legal representation or professional sports). No single concept, then, serves to describe all the industries in the services division.

Because the industries of the division are so diverse, one would expect that increases in *various* sources of demand are responsible for the division’s job growth. The relative importance of personal consumption and demand from business in driving growth varies to an extreme extent among the division’s industries. Furthermore, the industries that buy the greatest quantities of each business-oriented service vary greatly in accordance with the nature of the service. Many changes in our society—in demographic characteristics, technology, business practices, government policy, and individual lifestyle—affect the numbers of jobs in the industries of the division.

The industries adding the most jobs

During approximately the last decade, two vastly different industries within the services division, *business services* and *healthcare*, were responsible for the largest shares of

Table 1. Growth of jobs in business-oriented and consumer-oriented services, 1988 to 2000

(in thousands)

Service	Percent of output sold to producers, ¹ 2000	Percent of output sold to consumers, 2000	Percent of output sold to government excluding government enterprises, 2000	Growth in jobs		Job growth as percentage of total job growth in services division	Employment in 2000 as a percentage of total services-division employment
				Thousands	Percent		
Services division	48	51	0.2	14,956	59	100	100
Total business-oriented services	84	5	9	6,778	88	45	36
Agricultural services	66	26	8	354	79	2	2
Business services	86	4	10	5,220	113	35	24
Services to buildings	82	11	6	214	27	1	2
Personnel supply ²	93	3	5	2,537	188	17	10
Computer services	73	2	23	1,422	211	10	5
Miscellaneous repair	69	22	6	16	5	0	1
Engineering and management services	86	4	8	1,188	53	8	8
Engineering, architectural	94	0	0	287	39	2	3
Accounting, auditing, miscellaneous	95	2	3	188	35	1	2
Management and public relations services	88	0	11	582	114	4	3
Total consumer-oriented services	7	² 104	³ -11	6,828	49	46	52
Personal services	16	88	1	195	18	1	3
Amusements, recreation	22	80	³ -2	751	77	5	4
Healthcare	3	² 112	³ -14	2,990	42	20	25
Offices of healthcare practitioners	0	99	1	1,162	60	8	8
Nursing, personal care facilities	0	100	0	485	37	3	4
Hospitals	0	² 131	³ -31	697	21	5	10
Home healthcare	-	-	-	427	198	3	2
Private education ⁴	16	² 119	³ -35	758	48	5	6
Social services	4	92	4	1,351	87	9	7
Individual, family, miscellaneous	1	96	3	440	78	3	2
Job training, vocational rehabilitation	33	61	6	139	58	1	1
Child day care	0	98	2	356	100	2	2
Residential care	0	94	6	417	107	3	2
Museums, etc.	0	² 103	³ -3	48	83	0	0
Membership organizations	3	96	0	734	42	5	6
Religious organizations	-	-	-	619	63	4	4
Total mixed services	46	50	2	1,205	34	8	12
Lodging places	45	56	³ -1	372	24	2	5
Automotive services	41	56	2	415	50	3	3
Motion pictures	50	34	1	253	74	2	1
Legal services	53	41	4	165	20	1	2

¹Figures include intermediate flows of commodities and producers' investments in software and durable equipment.

²Sales of more than 100 percent indicate that some purchases are of services produced by government while private-sector production is the base.

³Negative figures indicate that government is a net producer, rather than a net consumer, of the services.

⁴Employment figures represent private education, but sales figures include some government educational services.

NOTE: Sales figures are from Employment Projections, Bureau of Labor Statistics. Employment figures are from Current Employment Statistics Division, Bureau of Labor Statistics.

Dash indicates data not available.

new jobs in the division.⁴ (See table 1.) In fact, the two industries account for more than half the growth in the division's jobs.

Business services, as the name implies, almost exclusively sell their output to other businesses. Just 4 percent of sales were attributable to personal consumption, while 86 percent of business services were sold to businesses.

The remaining portion of the industry's output was sold mainly to government.

The business services industry has many components, but two of them stand out in numbers of jobs gained. *Personnel supply* (including traditional employment agencies, temp agencies, and other organizations that find or supply labor to clients) and *computer services* (including mass-produced soft-

ware, custom programming, complete custom systems design, leasing, and more) together gained more than three-quarters of the 5.2 million jobs added to business services from 1988 to 2000. Personnel supply, however, gained almost twice as many jobs as computer services. (See chart 2.) Though these two industries are to some extent tied to the growth of the companies that contract them, the expansion of personnel supply services and computer services has been principally a consequence of changes in business processes. Within the period of 1988 to 2000, the use of both computer technology and supplied personnel became much more fundamental in business operations.

Within the healthcare industry, four components added tremendous numbers of jobs. Offices of physicians and other practitioners, nursing and personal care facilities, hospitals, and home healthcare gained 430,000 to 1.2 million jobs each. Two of the main factors driving the increases in healthcare are the development of new medical procedures, which require additional personnel to perform them, and an increasing proportion of elderly individuals.

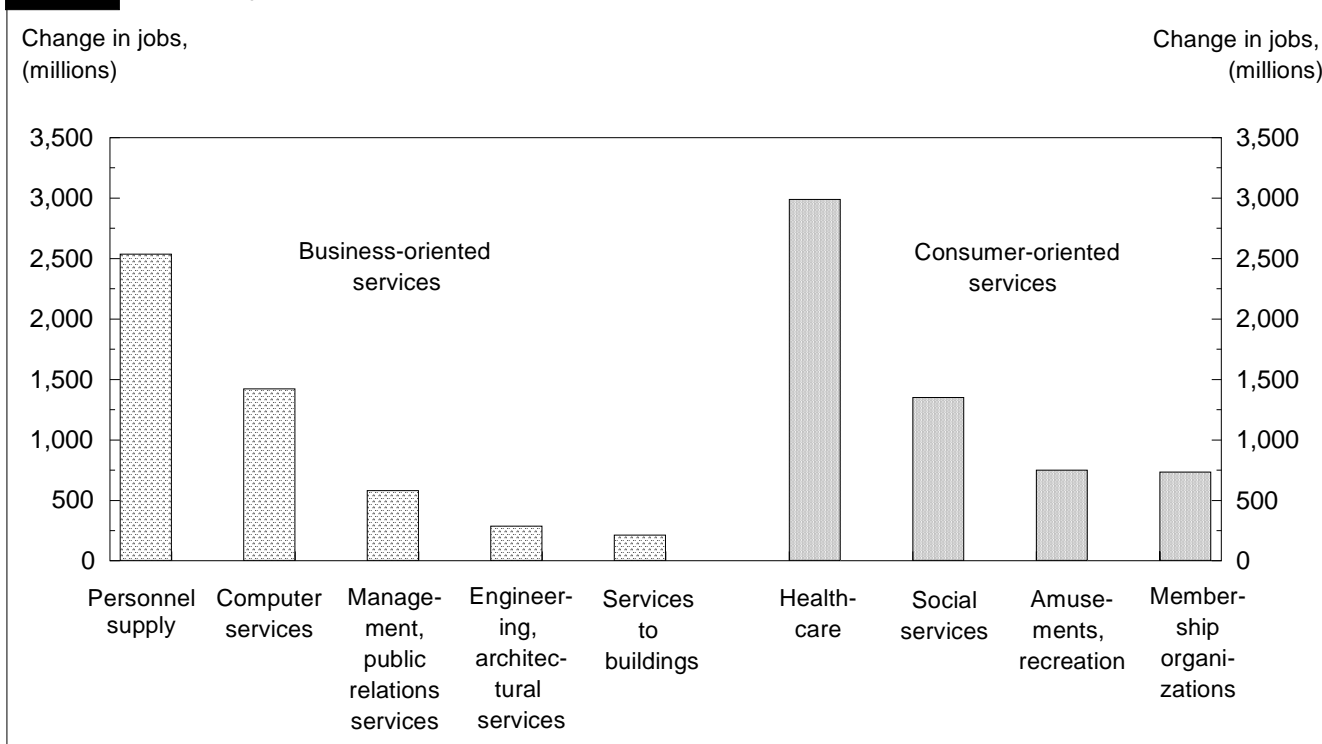
Services industries ranking just below business services and healthcare in numbers of jobs gained are social services such as daycare, residential care of the elderly, and other individual and family services; engineering and management services (including management consulting); private education;

amusements and recreation; and membership organizations (including houses of worship). Clearly, the major gainers in services include both industries primarily servicing businesses and industries primarily serving individuals.

Quantifying demands for services

The input-output tables produced by the Employment Projections unit of the Bureau of Labor Statistics may be used as a source of data to calculate the portion of a service's total sales to intermediate flows in the creation of another product or service. Input-output data also can be used to calculate the portion of sales to personal consumption, as well as to other types of final demand, such as international trade, government, and investment. However, intermediate business demand, producers' investment in durable equipment and software, and personal consumption account for nearly all (99 percent) of the sales of commodities produced primarily by the services division. (See table 1.) In this article, intermediate business demand, producers' investment in software (found in sales of computer services), and producers' investment in durable equipment (found in sales of engineering and architectural services) are viewed together as purchases by businesses, and the analysis contrasts purchases by producers with those made by consumers.

Chart 2. Growth of jobs in selected business-oriented or consumer-oriented services, 1988 to 2000



To be exact, a distinction should be made between the concept of an industry and the concept of a commodity. While each establishment is classified within an industry on the basis of the establishment's main economic activity—the production of a good or a service—the establishment may also engage in the production of a secondary commodity (a good or service produced at the same work site but to which fewer resources are devoted). Therefore, the output of an industry may not exactly equal the output of its main associated commodity. For example, hotels and motels are one industry, and eating and drinking places are another. If a hotel operates a dining room as a secondary activity, the personnel working in food preparation and service there falls into the lodging industry, despite producing a commodity more closely associated with eating and drinking places. The input-output “use” tables, extensively utilized in this article, quantify the sales of commodities rather than the sales of the output of industries. Nevertheless, we believe that the “use” tables are extremely valuable in explaining the employment trends of industries. Demand for an industry's main product or service is surely relevant to that industry's hiring.

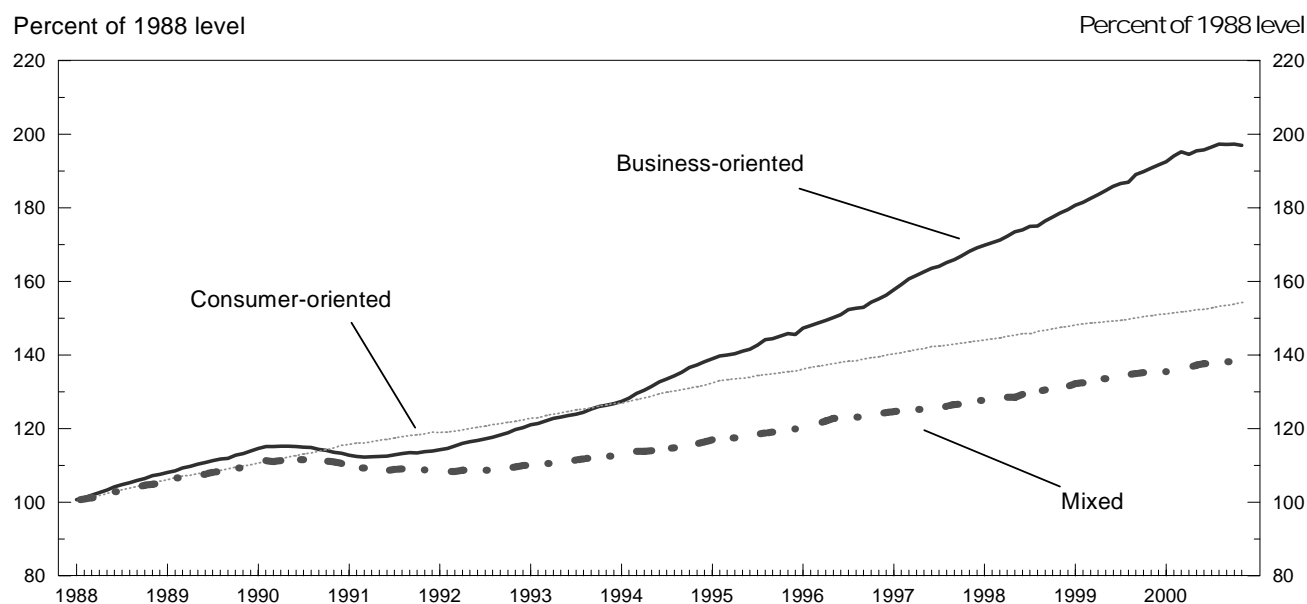
Most major commodity groups produced primarily within the services division either are sold to business far more than to consumers or are sold to consumers much more than to business. In other words, relatively few main commodity groups associated with the division serve personal consump-

tion and business demand about equally. Of the 15 main commodity groups associated with the division, 11 sell at least 66 percent of output either to business or to personal consumption. In most of those 11 groups, the percentage of sales to the main source of demand is even higher—more than 80 percent in 9 of the 11 cases. Furthermore, the 11 groups dominated by either type of demand, as opposed to the four groups serving each type of demand more equally, have a vast majority (87 percent) of the employment in the division.

Accordingly, the 15 main industry groups of the services division have been classified for purposes of this article as business-oriented, consumer-oriented, or mixed. The consumer-oriented groups are most numerous (seven) and, of the three classifications, have the greatest share of jobs in the division. Four main industry groups are business-oriented, and four relatively small main industry groups are mixed. (See table 1.)

The job trends of the business-oriented total and of the consumer-oriented total show large contrasts. Consumer-oriented services, the most numerous type, have the bulk of employment in the services division; accordingly, they contributed the greater increase over the period from 1988 to 2000. But jobs in the smaller group, business-oriented services, grew at a much higher percentage rate. (See chart 3.) Therefore, business-oriented services increased their share of jobs in the division. Consequently, consumer-oriented services de-

Chart 3. Indexed employment in business-oriented, consumer-oriented, and mixed services, 1988 to 2000



NOTE: Data are seasonally adjusted.

SOURCE: Current Employment Statistics Division, Bureau of Labor Statistics.

clined slightly in their share of jobs. The differences in the rates of growth among the three classifications are striking. Jobs in consumer-oriented services increased by 49 percent over the 12-year period, but business-oriented services grew by 88 percent. The mixed services increased by 34 percent, the lowest percentage, and became an even smaller piece of the division. To a greater extent, services are available either for consumers or for business, but not so much for both within the same industry. The development constitutes one form of increasing specialization in our society. The following table shows employment as a percentage of total services-division employment:

	1988	2000
Business-oriented industries	30	36
Consumer-oriented industries	55	52
Mixed industries	14	12

During the 12-year period, some consumer-oriented services became even more predominantly sold to consumers. In particular, healthcare, private education, social services, and membership organizations increased their already large proportion of output sold to consumers, decreased their small proportion of output sold to producers, or both. These shifts in sales constitute an additional trend toward greater specialization in industries: the consumer-oriented industries became even more consumer-oriented.

The shifts in sales of consumer-oriented services influenced total sales of the services division toward the consumer. At the same time, the faster growth of business-oriented services influenced sales in the opposite direction, toward sales to businesses. Sales of services-division commodities to businesses increased by 156 percent (in current dollars) over the 12-year period, while sales of services-division commodities to consumers increased by a considerably lesser 129 percent. A net result was a slight increase in the portion of total services-division output sold to business, and conversely a slight relative decline in the portion sold to consumers (as shown below).

	1988	2000
Percent of services-division sales attributable to:		
Business demand	45	48
Personal consumption	53	51

While sales of consumer-oriented services (in current dollars) were greater than those of business-oriented services in 1988, sales of business-oriented services exceeded those of consumer-oriented services by 2000.

Reasons for growth, restraints on growth

Business-oriented services. Three broad economic developments are highly relevant to the growth of business-oriented

services: *contractual labor arrangements* (such as outsourcing), *increased construction activity*, and *changing technology*. Each of the three factors' effects extended to multiple business-oriented services.

The effects of outsourcing or other alternatives to traditional, direct hiring are most obvious in the field of *personnel supply*, including temp agencies and employee leasing. Excluding the most traditional facet of the industry, namely employment agencies that provide placement in exchange for a fee, the contracted workers are formally employed by and receive their pay from the help-supply agency, though they are responsible for the tasks assigned to them by the companies that purchase their skills. The job increase in personnel supply—2.5 million—was so great that it was slightly more than three-quarters of the number added to the entire healthcare industry.

In personnel supply, two potential sources of growth are readily identifiable. First, industries that use supplied workers may expand, and therefore increase demand for personnel services. Second, managers of client industries may shift the compositions of their labor forces to utilize more supplied workers. In a recent paper, Marcello Esteveao and Saul Lach point to the latter reason for the growth in personnel supply, citing a change in managers' hiring behavior as the predominant source of employment growth in the personnel supply industry.⁵ They observe that from the mid-1980s to the mid-1990s, a surge in demand arose in manufacturing firms for temporary help supply workers. Many variables factor into the development of managers' new hiring practices. According to economists, company managers are taking advantage of temporary personnel—and the agencies that market them—for the following reasons:

- Utilizing temporary personnel allows companies to rapidly adjust their employment to optimum levels that match current production requirements. This practice reduces unwarranted expenditures by tying labor costs closely to present and projected demand.⁶ Temporary employees are used as “buffers” to mitigate negative financial consequences of surges or declines in demand. The high variance in growth rates of personnel supply employment substantiates anecdotal evidence that managers use flexible labor to respond promptly to changes in demand.
- Agencies now often conduct training of recruits. In response to the growing need for computer-savvy workers, an increasing number of personnel supply companies are offering to equip workers with fundamental computing skills. According to the American Staffing Association, expenditures footed by staffing agencies for skills training increased to \$720 million in 1997 from \$260 million in 1995.⁷ Because numerous client compa-

nies benefit from contracting trained workers, economies of scale lessen the financial burden that might otherwise be borne by each company.⁸

- Contracting through temporary help supply agencies often aids the process of permanent, direct hiring. Client companies often use temporary workers' time with them as a probationary period when the companies can evaluate the worker for a directly hired position. Utilizing this practice allows companies to expend less time and money finding, interviewing, and training workers. This practice potentially decreases turnover rates as companies hire workers that are good matches for the positions they fill.⁹

In summary, the cost efficiency of supplied workers and the shorter-term commitment of contractual labor arrangements are major reasons why many company managers have decided to make extensive use of supplied labor.¹⁰ The tremendous job growth of the personnel supply industry, an increase of 2.5 million jobs during the period, is one result.

The addition of jobs to personnel supply and other industries that sell contractual labor as a substitute for direct hiring must be interpreted with caution. The growth of contractual labor represents, in part, a shifting of jobs from industry to industry rather than sheer growth—if contractual labor were not available, the clients might hire or continue to employ people directly. Growth in personnel supply and certain other industries is to some extent offset by its effects on employment levels in the client industries.

Because contractual labor can be more affordable and often entails a shorter commitment than direct hiring, contractual labor may enable firms to acquire a larger number of workers than they could recruit, hire directly, and train at the same costs. If so, contractual labor may have the effect of increasing total employment to some extent by lowering its costs, rather than *only* shifting employment from one industry to another.

Contractual arrangements instead of direct hiring also contribute to the growth of *management services*. Unlike the formerly typical scenario of a consulting company leaving management with a report and then ceasing to be involved, modern consultants often contribute actively to the transformation of a business process, and may leave some of their own personnel onsite indefinitely to run that process partially or fully. Facilities support services, another part of the management services industry, has also been on the rise.

Furthermore, the trend toward more contractual arrangement of labor as opposed to simple hiring also affects the *engineering services* industry. In the current environment of constantly changing technology, the proportion of engineers working directly for manufacturers has declined (to 45 percent from 53 percent), while the proportion in professional

services has risen (to 20 percent from 15 percent). The redistribution of engineers by industry implies an increasing prevalence of contractual engineering.¹¹

Increases in *construction activity* at least potentially fuel growth in engineering, architectural, surveying, and landscaping and horticultural services. The construction division purchases 55 percent of those *engineering services* sold as an intermediate commodity, largely because of the need for civil engineering when public works such as bridges or tunnels are built.

Engineering increased its employment proportionately more than did heavy construction, suggesting that at least one other factor also serves as an upward influence on contractual engineering. As previously mentioned, more contracting out of engineering for manufactured products is implied by the shift of engineers away from manufacturing and into services. From 1988 to 2000, according to input-output tables, manufacturing, communications, and real estate bought increased portions of engineering and architectural services.

According to data from the Current Population Survey, the increase in numbers of employed engineers from 1988 to 2000 was concentrated in the fields of civil, electrical and electronic, industrial, and mechanical engineers, as shown in the following tabulation:

Occupation	Change, 1988 to 2000	
	Thousands	Percent
Engineers	288	16
Civil	70	32
Electrical, electronic ...	152	27
Industrial	23	10
Mechanical	45	15
All others	-2	0

Of these occupations, civil engineers increased by the greatest percentage. Furthermore, a 76-percent increase of civil engineers in “other professional services” industries, which include consulting engineers, suggests that use of contractual engineering for purposes related to structures increased substantially. More broadly, a 63-percent increase of engineers employed in “other professional services” industries greatly exceeded that of engineers in all industries (16 percent). A general shift toward contractual engineering as opposed to directly hiring engineers is therefore suggested.

A relationship between construction activity and employment in the *architectural and surveying* industries is clear. The employment trends of construction and architectural and surveying services are extremely close. Employment in architectural and surveying services follows the trend of construction employment much more closely than the trend of general economic activity as represented by real gross do-

mestic product. Linear correlation shows that more than 99 percent of the variation in architectural and surveying employment from 1988 to 2000 can be predicted on the basis of employment in construction.

Growth in the business-oriented services most closely associated with construction was, however, generally at relatively slow rates in the context of business-oriented services. As shown in table 1, higher growth rates in business-oriented services were primarily in personnel supply, computer services, and management and public relations—fields more associated with flexible labor arrangements and technological change.

Between 1988 and 2000, probably the most important change in business was the widespread incorporation of *computer technology* into the workplace. During the time period, the functionality, speed, and utilization of computers exponentially increased; and computers became vital business tools and facilitators of greater efficiency. As the computer in its many forms rapidly penetrated business markets, the demand for personnel to service and program the computers grew. Like personnel supply, *computer services*, including the software industry, cater primarily to businesses, generating most of their revenue from intermediate transactions rather than from consumers. In 2000, 73 percent of computer-services sales were to other businesses. Excluding government enterprises, government bought 23 percent; and despite the popularity of home computers, consumers accounted for only 2 percent of sales.

The scope of the products, knowledge, and services in which the computer services industry deals is expansive. The advent of the Internet in the early and mid-1990s made the industry even more varied. In general, computer service establishments repair, maintain, design, and develop software and hardware for all types of computers and networks, including Internet service providers.

The upward trend of employment in computer services is the result of two main factors: first, the continuing development of computer technology, and second, a shift in client companies' business models to include more outsourcing of technological services.

Moore's Law says that computer chip speed doubles every 18 months. Though seemingly improbable, this "Law" generally held true throughout the 1990s. Increasing processing speed enabled programmers to create and use a wider range of more sophisticated applications in business processes with improved speed and efficiency.¹² *The Wall Street Journal* reports that the cost per million instructions a second in 1995 was one-thousandth the cost in 1985.¹³ The increased value of computer technology allowed a greater number of businesses to financially justify their purchases of computer hardware and software.

In addition to faster speed, computers became more "user-friendly." Computer makers and software manufacturers began marketing applications that appealed to those who desired to use computers but were not expert in programming languages. As such innovations improved the functionality of computers, they became more viable business tools for those not explicitly involved in programming.

Another innovation that increased computer usage—and consequently, the demand for computer services—was the founding of computer industry standards.¹⁴ The most important standard that developed over a series of years was the acceptance of a highly compatible operating system. Until the early 1990s, Apple and Microsoft marketed popular competing operating systems that were essentially incompatible. Because Microsoft decided to license its technology and increase its market presence, its Windows platform eventually won the lion's share of the market and became the standard operating system. Companies were able to invest heavily in technological capital, including software and hardware, knowing that their systems would not soon be outdated by an incompatible competing application. As companies invested in hardware and software, their demand grew for human capital to customize and maintain the software and hardware for their respective business processes.

The widespread implementation of the Internet also undoubtedly spurred growth in computer services. Since 1995, the year when the Internet achieved feasibility as a business medium, the number of jobs in computer services has increased by more than 90 percent.

The increasing speed of computer chips, friendlier applications, creation of industry standards, and Internet growth have all increased the need for computer services workers.

While the addition of 1.4 million jobs to the computer services industry is one clear reflection of the constant change and vast popularity of computer technology, changing computer technology also contributes to the growth of *management consulting*. Consultants are often used to upgrade clients' processes that include computer use; indeed, the largest component of a consulting job may be creating or adapting software. The advent of computer technologies in the workplace and advancing business processes required companies to implement and utilize new systems quickly in order to stay competitive. The integration of high technology into almost every aspect of business made using technology-savvy consultants an efficient alternative to direct hires. The consultants are already organized and experienced in improving business processes that include information processing. Management consultants, however, by definition differ from computer services companies in that management consultants are involved in broader changes than upgrading or creating computer technology alone. Just the same, the largest

aspect of a consulting job may be changing or replacing a computer system for performing a particular process.

When the business community accepted the Internet as a viable business tool, clients looked to consultants not only to advise them in Internet strategies, but also to assist them in implementing e-commerce business plans and network infrastructure. The role of consultants was therefore further expanded.

Engineering services also benefit from the constant demand for more advanced intelligent technology in various products, such as major appliances, small appliances, and vehicles. In 2000, automotive and auto-parts manufacturers spent \$116 million on engineering performed by outside firms.¹⁵ Changing technology in general, almost by definition, increases demand for various types of engineers (see the preceding tabulation showing increases in engineers by type).

Table 2 breaks down the sales of business-oriented services by the industry division of the purchaser. Some information on the more specific industries most heavily buying certain services may be of interest, especially when the division making the greatest purchases is services, a heterogeneous group of industries. Personnel supply is purchased most within the services division. Within the division, its biggest clients include quite a variety of industries: miscellaneous business services (such as marketing and telephone answering, among others), management and public-relations services, hospitals, computer services, and hotels and motels. When sales of personnel supply to the services division are divided among business-oriented, consumer-oriented, and mixed services, business-oriented services buy the greatest

share. The following are purchases of personnel supply services in 2000:

<i>Purchases by industry of client in billions</i> ¹⁶	
Business-oriented services ¹⁷	\$18
Consumer-oriented services	13
Mixed services	5

The services division purchases the greatest share of management and public-relations services as well. The specific services industries using them most heavily, excluding sales *within* management and public-relations services, are hospitals (\$15 billion) and engineering and architectural services (\$5 billion).

Although the business-oriented industries as a group increased in jobs enormously faster than either the consumer-oriented industries or the mixed industries, *accounting, auditing, and bookkeeping* (as well as *engineering and architectural services* and *services to buildings*) had comparatively low growth. The greatest reason for the low growth in *accounting, auditing, and bookkeeping* since 1988 is advances in technology that decreased the time spent on accounting tasks. One of the greatest inventions of the computer age is the simple spreadsheet program. The electronic spreadsheet enabled accountants to move almost all their accounting activities from paper ledgers to computer programs. With a few keystrokes, accountants can adjust accounts to include new data and create complicated reports. Tasks that had often required days necessitate only a few minutes of work. Programmers have expanded the concept of the spreadsheet to develop complex accounting programs that perform almost

Table 2. Intermediate purchases of selected commodities by industry division of purchaser, 2000

[In billions]

Industry division of purchaser	All types of commodities	Total Services-Division commodities	Veterinary, landscaping, horticultural services	Business services		Miscellaneous, repairs	Engineering, management services		
				Total	Personnel supply		Total	Engineering, architectural services	Management, public-relations services
Mining	\$88	\$7	-	\$2	\$1	-	\$3	\$2	-
Construction	570	114	4	20	5	6	74	58	14
Manufacturing	2,702	251	2	127	17	19	35	9	12
Transport	287	58	-	20	5	2	10	1	5
Communications	196	67	-	20	3	3	13	6	2
Utilities	134	17	-	5	2	0	5	2	1
Wholesale trade	297	110	1	64	10	4	22	1	14
Retail trade	470	144	1	95	9	4	18	-	9
Finance	381	106	-	54	9	1	33	-	16
Insurance	190	45	-	17	3	0	9	-	6
Real estate	189	71	6	33	3	3	14	8	3
Services	1,242	519	5	205	37	13	150	13	65
Government enterprise ..	101	15	1	4	1	1	7	5	1

Dash indicates less than \$500 million

SOURCE: Employment Projections, Bureau of Labor Statistics

every feature of accounting.¹⁸ These advances have significantly reduced demand for accounting labor.

Consumer-oriented services. In numbers of employees, *healthcare* is by far the largest consumer-oriented industry in the division. Among employment gains in major industry groups of the services division, the healthcare increase was the second largest in simple magnitude. But because of the healthcare industry's enormous employment base, this great gain represents one of the smaller percentage increases. Although healthcare contributed the second-greatest number of new jobs to the services division, the industry's growth in percentage terms was well below that of the services division as a whole. Therefore, the proportion of services-division jobs that were in healthcare decreased slightly.

While increases in the elderly population and the invention of new treatments and diagnostic tools have added to demand, government and private efforts to control healthcare costs have prevented greater growth than otherwise would have occurred. Government, insurers, and employers have restricted healthcare payments through a vast number of changes to the rules governing coverage; furthermore, the Federal Government improved its policing of fraud and abuse in billings to Medicare.¹⁹ These developments, by muting the growth of healthcare expenditures, contributed to the trend toward a smaller proportion of consumer-oriented employment and a greater proportion of business-oriented employment in the division.

Table 1 shows that job growth in *hospitals*, on a percentage basis, was relatively slow even compared with other healthcare industries. Because of hospitals' relatively slow pace of growth, hospital employment as a percentage of jobs in the services division declined to 10 percent from 13 percent. Three factors contributed to the relatively slow growth rate in hospitals. First, patients admitted to hospitals increasingly stayed for shorter periods or were treated on an outpatient basis. Second, hospitals progressively utilized outsourcing to reduce expenses. Third, changes in Medicare and Medicaid payments tightened hospital budgets.

Health maintenance organizations (HMOs) played an active role in shortening hospital stays and consequently reducing employment growth. As the costs of healthcare soared, HMOs grew in popularity by offering low premiums. As a result, the number of persons enrolled in HMO plans more than doubled between 1990 and 1999.²⁰ HMOs controlled costs in order to stay solvent; other types of plans also took measures to reduce their costs. One way in which HMOs addressed costs was by regulating, and thereby reducing, the number of days people spent in hospitals.

Between 1995 and 2000, increases in aggregate State and Federal hospital care expenditures for Medicare and Medicaid slowed markedly,²¹ curbing a major source of hospital in-

comes. Federal initiatives such as those enacted under the Balanced Budget Act of 1997 enforced new guidelines to control Federal reimbursements to hospitals and other healthcare facilities. These changes tightened hospital budgets and slowed hiring of nurses and other staff.²²

The increased utilization of outsourcing was a move toward greater efficiency in hospitals. Hospitals increasingly contracted services that fell outside their "strategic competencies." Housekeeping, food preparation, transcription, information technology services, and even surgeries outside of resident surgeons' specialties were progressively contracted to others outside the hospital industry. By outsourcing, hospitals took advantage of economies of scale available through other services companies.²³

A large part of the hospital industry's growth can be attributed to the growth and aging of the U.S. population. From 1988 to 2000, those aged 75 years or more increased by 33 percent—more than two and one-half times the rate of increase of the general population!²⁴ As people age, their utilization of health services increases. For example, in 1998, people aged 75 years and older averaged 3,031 days of hospital stay per 1,000 people, in non-institutional, short-term hospitals. That number of days is almost two times the average number for those aged 65 to 74, and more than five times the average number of days for the population as a whole.²⁵

Outsourcing of various services, constraint of revenue from Medicare and other third-party payers, and the substitution of outpatient services for some inpatient business slowed growth in direct employment by hospitals. Despite the changing demographic composition of the United States, hospital employment growth totaled just 21 percent over the 12-year period. Cost-cutting policies also affected other healthcare industries, such as offices of physicians. Over the 12-year period, employment in healthcare as a whole increased 42 percent. This gain was well below that of the services division as a whole (59 percent), and was considerably less than half the percentage growth of business services (113 percent).

Among consumer-oriented major groups, *social services* ranked just below healthcare in the generation of more employment. Jobs in social services increased at the outstanding rate of 87 percent over the 12 years. Individual, family, and miscellaneous social services; daycare; and residential care facilities (homes for the elderly and others who are unable to live independently yet are not in need of nursing care) *each* gained more than a third of a million jobs. Job training and vocational rehabilitation added a lesser but still substantial 139,000 jobs.

Certain possible explanations for the growth of daycare and residential care—explanations that one might expect to be the major ones—account for surprisingly little of the growth. One factor contributing to the use of social services might be greater employment in general, leaving fewer persons free to

care for children or elderly relatives. But in fact, the proportion of the over-16-year-old noninstitutional population that was employed increased only slightly—to 64.5 percent from 62.3 percent—from 1988 to 2000.²⁶ Employment among mothers with 3- to 5-year-old children increased to 68 percent from 57 percent from 1988 to 2000, accounting for only some of the 100-percent increase in daycare employees. Changes in the population of young children also account for a small part of the gains in daycare employment. The resident population of 3- to 5-year-olds rose by only 4.3 percent from 1988 to 2000.

During that time, the ratio of daycare employees to the 3- to 5-year-old population nearly doubled, to 6.2 percent from 3.3 percent. Importantly, daycare became much more affordable during the period. Public and private initiatives including tax breaks like the Earned Income Credit and tax-free employer-provided dependent care in effect lowered the cost to parents.²⁷ State funding of preschool programs, including many run by privately owned entities, also contributed to the growth of the social services industry. New York and Georgia have legislated universally available preschool. In both States, funding goes to many private preschool programs.²⁸

The population who are 75 years of age and older increased substantially, by 33 percent. Still, the 107-percent increase in *residential-care facility* employees must reflect other social changes as well. During the period, “assisted living” facilities became increasingly popular among the oldest demographic groups. Such facilities offer the elderly the freedom of living independently of relatives but provide assistance with tasks that are physically difficult, such as food preparation and cleaning. The mix of independence and convenience has made assisted living facilities extremely popular. In 1998, an estimated 75 percent of all construction for seniors consisted of assisted living units.²⁹

Facilities that provide assisted living arrangement have been in existence for a long time, but only in recent years have they been widely operated as profit-making establishments. In the 1970s, nonprofit groups commonly maintained residential care facilities. Now for-profit companies operate an estimated 90 percent of assisted living establishments.³⁰

A legal framework that accommodates seniors’ desires to live in assisted living facilities is also taking shape. As of June 2000, 38 States were already reimbursing costs of assisted living or board and care through Medicaid or had approval to do so, and other States were in various stages of implementing similar funding structures. By reimbursing living costs, the governments indirectly increased demand for assisted living complexes.³¹

Private education added more than 750,000 jobs from 1988 to 2000, but those jobs represented just a 48-percent increase, relatively low compared with other services industries. The largest component of private education, colleges and universities, increased at the still lower rate of 32 percent. Anecdotal

evidence indicates that enrollment was limited by the alternate opportunities presented by a favorable job market.³² Also, rising costs of a college education have been cited as a factor that discourages enrollment.³³

The gain of more than 700,000 jobs in *membership organizations* was primarily in religious organizations, which gained 619,000 jobs. Employment in religious organizations increased by 63 percent, a higher-than-average rate within the services division.

Employment in *amusements and recreation* increased by 77 percent over the period, considerably outperforming the services division as a whole. Many types of entertainment or recreation added large numbers of jobs, as shown in the following table:

Industry	Increase in jobs, 1988 to 2000	
	Number	Percent
Amusement and recreation not elsewhere classified ³⁴	206,000	129
Membership sports, recreation clubs	117,000	49
Physical fitness facilities	110,000	103
Public golf courses	89,000	255
Amusement parks	60,000	73
Producers, orchestras, entertainers ..	59,000	48
Coin-operated amusement devices ..	52,000	205

The separate, smaller, but arguably analogous industry *museums, zoos, and botanical gardens*³⁵ is similar in that it provides leisure-time activity. This small industry increased its employment at about the same rate as amusements and recreation. Both industries are likely to benefit from the overall population’s increased disposable income, which normally encourages travel.³⁶ Americans had much more money to spend in 2000 compared with the late 80s. Real disposable personal income rose 37 percent in aggregate, or 22 percent per capita, during the 12-year period ending in 2000.³⁷

Despite the various substantial increases in consumer-oriented employment, the 49-percent increase in combined consumer-oriented industries was far below the 88-percent increase in the division’s business-serving industries. Yet the 49-percent increase in consumer-oriented industries was about twice the rate of increase in all nonfarm payroll employment (up 25 percent during the 12-year period).

Mixed services. Among the four industries serving personal demand and intermediate business demand fairly equally, only *motion pictures* grew faster in employment than did the services division in general. The motion-picture industry increased its employment by about 250,000 jobs or 74 percent. As the industry includes the making of television commercials and corporate training films in addition to feature films and television shows, 50 percent of the sales are to business demand. Film production is one of the industries that ben-

efited from the growth of computer technology. Demand for television advertising of websites was exceptionally strong late in the period, increasing the overall demand for television advertising.³⁸

Employment in the three remaining mixed industries grew at rates lower than the average of the services division. The *automotive services* industry grew by a relatively low 50 percent. The remaining mixed industries—*legal services* and *lodging places*—grew 20 percent and 24 percent, respectively.

Extended hours. Although some factors stimulating growth were exclusive to a small cluster of industries, other factors undoubtedly influenced a large number of industries and drove the fast growth characteristic of most services in the late 1980s and through the 1990s. One such factor is the elongation of business hours. Establishments classified as services often win customers by marketing “convenience.” One element of convenience in service industries is accessibility. To be more accessible, and therefore more attractive to clients, establishments are increasing their business hours and number of days per week of operation. These establishments operate on the premise that customers want to access services when their need or desire is most pressing. As a result, computer specialists work on call, childcare establishment are staying open late into the evening and on weekends, and temporary personnel work whenever the company contracting them needs their services to meet demand. As establishments increase their hours to become more accessible, employment in services increases.³⁹

Government demand

Although consumer demand and intermediate demand from business together account for 99 percent of the sales of the services division’s main activities, certain industries of the division serve government to a fair extent. Computer services and management and public relations services each sell more than 10 percent of their output to government final demand. (Final demand from the public sector excludes demand from government enterprises, which are public entities that sell a product or service. The Postal Service is a good example of a government enterprise.)

About two-thirds of the *computer services* sold to public-sector final demand were sold to the Federal Government as opposed to State and local governments. Yet increases in demand were concentrated in State and local governments, as shown in the tabulation below, showing purchases as percentages of output:

Year	Federal Government	State and local government
1988	14	5
2000	15	8

In 2000, *management and public relations services*, such as management consulting and contractual management of facilities, sold 11 percent of their output to government final demand, mainly to State and local governments. The percentage of output sold to government final demand was considerably reduced from 1988, as shown in the following tabulation:

Year	Federal Government	State and local government
1988	10	8
2000	3	9

By 2000, *engineering and architectural services* sold a vastly reduced portion of their output to the final demand of the Federal Government. The proportion of *engineering and architectural services* sold to government final demand was a net 6.0 percent in 1988 and a net 0.02 percent in 2000. A major factor in the reduction of Federal Government buying of engineering was the end of the Cold War and the consequent “peace dividend” or reduction in defense spending.⁴⁰ In 1988, defense bought 8 percent of engineering and architectural services; the defense share was reduced to 2 percent in 2000. Two of the three services industries discussed in this section, then, sold a considerably reduced portion of their output to government by 2000. The total percentage of commodities produced by the services division as a whole and sold to government final demand were greatly reduced. While 1.4 percent was sold to government final demand in 1988, in 2000 only 0.2 percent was.

International trade

International trade provided a small but increasing market for the output of the services division, providing further evidence of an increasingly international economy. From 1988 to 2000, international trade of commodities provided mainly by the division increased to 0.8 percent from 0.6 percent. Two commodities exhibited relatively high net sales of output to international markets. In each of the two services, net international sales remained a fairly small percentage of output but increased impressively from 1988 proportions.⁴¹ The following tabulation shows net exports (exports less imports) as a percentage of industry output:

Year	Motion pictures	Engineering, architectural services
1988	9.8	3.3
2000	16.1	6.1

Conclusions and the future

Outsourcing and other flexible labor arrangements, constantly changing intelligent technology, and increased construction

activity, as well as strong general economic growth, powered the vast increases in business-oriented services. During the 12 years, jobs in business-oriented services increased at a much greater rate than those in consumer-oriented or mixed services. Businesses' willingness to invest in ever-advancing technology, then, has been one key factor. In addition to the Internet, frequently changing versions of internal business software and hardware and the making of more intelligent devices in general—including vehicles and home appliances—are relevant. Both the continuous acquisition of new technology and flexible labor arrangements portray the attitude of adapting to frequent change in the business environment, and thereby also contributing to frequent changes.

Despite the proportionately greater gains of business-oriented services, consumer-oriented services still, though barely, include a majority of the employment in services. Because of the greater scale of the consumer-oriented group of industries, its job increase in absolute terms slightly exceeded that of business-oriented services.

A number of the trends depict a society that is in some ways increasingly dedicated to future investment by means of both capital and increased effort. Business-oriented services—such as upgrading of software and intelligent machinery, services related to construction, and improvement of business processes with the aid of consultants—may all be interpreted as present investments for a wealthier future. The extension of business operating hours may be interpreted in

the same way. Even two rapidly increasing social services, daycare and residential care, enable some people to work outside the home instead of caring for relatives, and to contribute to economic expansion.

Rapid growth of certain other industries, however, is of an opposite nature. Amusements and recreation; museums, zoos, and botanical gardens; and religious organizations grew rapidly and from the point of view of demand have little to do with building wealth for the future. At some point on the income scale, work may reach a point of diminishing returns for many individuals, perhaps limiting the number of two-income households or contributing to earlier retirements. The extension of the lifespan also has the effect of increasing the length of retirement and the number of retirees at a given point in time.

Whether the trends described in this paper continue, and to what extent, depends on a number of factors that cannot be predicted with confidence. The factors include, but are not limited to: the future popularity of the Internet—and perhaps of other, unforeseen technology—on the part of both the business community and the public; the future frequency of upgrades of software and other products; the need for workers per unit of output in an increasingly automated world in which even the creation of software and engineering is made more efficient by computer technology;⁴² future healthcare policy; and family lifestyles as they affect demand for social services like daycare and elderly care. □

Notes

¹ Data representing employment as used in this article are from the Current Employment Statistics (CES) program, which surveys nearly 380,000 nonfarm employers monthly. For more information on the CES program's concepts and methodology, see *BLS Handbook of Methods*, Bulletin 2490 (Bureau of Labor Statistics, April 1997), chapter 2, pp. 15–31. These data are available on the Internet at <http://www.bls.gov/ceshome.htm>.

² Input-output data are prepared by the Bureau of Economic Analysis, U.S. Department of Commerce, and for purposes of labor issues are further processed by the Office of Employment Projections in the Bureau of Labor Statistics. The Office of Employment Projections provides projected figures for years not covered by Department of Commerce input-output tables. The input-output statistics used in this article are from Office of Employment Projections, BLS sources.

³ The industry classifications used in this article, except for the assignment of business-oriented, consumer-oriented, or mixed status, are from the *Standard Industrial Classification Manual 1987* (Washington, DC: Executive Office of the President, Office of Management and Budget).

⁴ The year 1988 was chosen as the starting point because several of the industries under study have time-series of employment starting in 1988. That year, fortunately, is a good choice because of its cyclical comparability to the ending point (2000). Both years were prosperous ones in well-established economic expansions.

⁵ Marcello Esteveao and Saul Lach, *The Evolution of the Demand for Temporary Help Supply Employment in the United States*, NBER Work-

ing Paper 7427 (Cambridge, MA, National Bureau of Economic Research, Dec. 1999).

⁶ *Report on the American Workforce* (Washington, DC, U.S. Department of Labor, 1999), p. 22.

⁷ Timothy W. Brogan, *Annual Analysis*, American Staffing Association, March 2000, on the Internet at <http://www.staffingtoday.net/staffstats/analysis99.htm>.

⁸ *Report on the American Workforce*, p. 4.

⁹ *Report on the American Workforce*, pp. 22–24; and Edward A. Lenz, *How Staffing Services Benefit Workers and the Economy*, American Staffing Association, March 15, 2000, on the Internet at <http://www.natss.org/staffstats/issuepapers1.htm>.

¹⁰ See Angela Clinton, "Flexible labor: restructuring the American work force," *Monthly Labor Review*, Aug. 1997, pp. 3, 16.

¹¹ Employment by occupation and industry are from the Current Population Survey.

¹² In 1965, Gordon Moore, co-founder of Intel, observed that since the invention of the integrated circuit, or processing chip, the transistor capacity on chips had doubled every year. He predicted that this exponential trend would continue, and his theory was later dubbed Moore's Law. Though popular computing culture has altered Moore's Law to extend the period in which transistor capacity doubles to every 18 months, Moore was correct in predicting the rapid expansion of capacity. From Webopedia, *Definition: Moore's Law*, October 19, 2000,

on the Internet at http://webpoedia.internet.com/term/m/moores_law.html; and Intel.com home, on the Internet at <http://www.intel.com/research/silicon/mooreslaw.htm>.

¹³ Jim Carlton, "Technology (A Special Report): The Technology—It Seems Like Yesterday: the PC has come a long way and quickly," *Wall Street Journal*, November 16, 1998.

¹⁴ Carlton, "Technology (A Special Report) . . ."

¹⁵ From 2000 "use" table from Employment Projections, Bureau of Labor Statistics.

¹⁶ Use table, Employment Projections, Bureau of Labor Statistics.

¹⁷ Excluding personnel supply itself because intraindustry sales are not readily interpretable in this context.

¹⁸ Gary Seigel, "Counting More, Counting Less: The New Role of Management Accountants," *Strategic Finance*, November 1, 1999.

¹⁹ Cynthia Engel, "Health Services Industry: Still a Job Machine?" *Monthly Labor Review*, March 1999, pp. 3–14.

²⁰ InterStudy Publications, Minneapolis, *The InterStudy Competitive Edge*, annual; also Bureau of the Census, *Statistical Abstract of the United States: 2000* (120th edition, Washington, DC, 2000), Chart 175.

²¹ Health Care Financing Administration, "National Health Expenditures Table 5," on the Internet at <http://www.hcfa.gov/stats/nhe-oact/tables/t5.htm>.

²² At the end of the 12-year period under study, specifically in December 2000, Federal healthcare payments to providers became more generous. Hiring in the healthcare industry, after increasing by only 1.6 percent in 2000, accelerated to a 3.0 percent annual rate in 2001 despite the general economic slowdown.

²³ Scott Hensley, "Survey Shows More Hospitals Turning to Outside Firms for a Broad Range of Services," *Modern Healthcare*, Jan. 13, 1997.

²⁴ Bureau of the Census, National Population Estimates found on the Internet at <http://www.census.gov/population/www/estimates/uspop.html>.

²⁵ National Center for Health Statistics, U.S. Department of Health and Human Services, *Vital and Health Statistics*, Series 13; and unpublished data; also *Statistical Abstract . . . 2000*, Chart 199.

²⁶ Table A-1, "Employment status of the civilian non-institutional population 16 years and older, 1968 to date," *Employment and Earnings*, Jan. 2001, p. 9, on the Internet at <http://stats.bls.gov/pdf/cpsaa+1.pdf>.

²⁷ William Goodman, "Boom in Day Care Industry the Result of Many Social Changes," *Monthly Labor Review*, Aug. 1995, pp. 3–12.

²⁸ Linda Jacobson, "Plans for Universal Preschool gain Ground in New York State," *Education Week*, Oct. 25, 2000. See also the website of the Georgia Pre-K Program on the Internet at <http://www.osr.state.ga.us/whatisprek.html>.

²⁹ *Trends and Data: Aging Housing and Services Field*, American Association of Homes and Services for the Aging, 1999. Quoted at the

American Association of Retired Persons, *Assisted Living in the United States*, on the Internet at http://research.aarp.org/il/fs62r_assisted.html.

³⁰ Linda A. Johnson, "Growth Continues at Fast Pace for Assisted Living Centers," *The Journal Record*, Nov. 25, 1998.

³¹ Robert Mollica, *State Assisted Living Policy: 2000* (National Academy for State Health Policy, 2000).

³² See for example Gregory St. Martin, "Boston U.: High schoolers skipping college for high tech jobs," *U-Wire*, April 13, 2000; and James Salzer, "College enrollment slows: Strong economy blamed for failure of some schools to meet targets," *The Atlanta Constitution*, May 11, 2000; and Carol Innerst, "College enrollment declines slightly, continuing trend; availability of jobs partly responsible," *The Washington Times*, Jan. 20, 1996, p. A3.

³³ Rene Sanchez, "Colleges Compete for Cost-Conscious Students; Tuition Deals Among Innovations That Seek Hedge Against Inflation," *The Washington Post*, Mar. 21, 1995, p. A1.

³⁴ "Amusement and recreation services not elsewhere classified" include a vast variety of establishments from aerial tramways to yoga instruction. Sports instruction of many kinds is included.

³⁵ Only privately owned zoos, museums, and botanical gardens are included in the category; publicly owned institutions are classified in the government division.

³⁶ The incidence of flying increases with income, according to Air Transport Association of America, *Air Travel Survey 1993, 1994*, p. III–14. Furthermore, the percentage of trips by airline that were taken for recreational purposes increased substantially from 1977 to 1997. (See *Air Travel Survey 1998, 1998*, p. V–5.)

³⁷ Disposable income statistics are from the Bureau of Economic Analysis, U. S. Department of Commerce, on the Internet at <http://www.bea.doc.gov/bea/dn/nipaweb/TableViewFixed.asp?SelectedTable=27&FirstYear=2000&LastYear=2001&Freq=Qtr> (visited Aug. 3, 2001).

³⁸ Skip Wollenberg, "Internet Advertising Tops \$1 Billion," *Pittsburgh Post-Gazette*, Dec. 14, 1999.

³⁹ Roger Bull, "Open All Night In a 24-hour Economy," *The Florida Times-Union*, November 4, 1999; Rob Kirkbride, "After Midnight, Night Workers Propel the 24-hour Economy," *The Grand Rapids Press*, September 3, 2000; and Karen Robinson-Jacobs, "The Day-Care Night Shift Valley Network Offers Solutions to Parents Who Work Odd Hours," *Los Angeles Times*, September 27, 1998.

⁴⁰ See R.A. Ellis, *At the Crossroads: Crisis and Opportunity for American Engineers in the 1990's*, special edition of *Engineering Workforce Bulletin* (Washington: American Association of Engineering Societies, Inc.), Jan. 1994.

⁴¹ From "FD–AGG" tables, Employment Projections, Bureau of Labor Statistics.

⁴² R.A. Ellis, *At the Crossroads:...*