SERVICE INDUSTRIES AND ECONOMIC PERFORMANCE

U.S. Department of Commerce
Economics and Statistics Administration
Office of Policy Development

March 1996

PREFACE

ESA's analytic mission is to explain changes in the structure of U.S. industries and firms that affect the nation's overall economic performance. The present study examines the character and causes of the economy's increasing service orientation and considers implications of the shift to services for U.S. economic growth, employment, and competitiveness. The study was prepared by Gerald Moody, Sandra Cooke, Kan Young, and David Henry with the guidance and participation of Warren Farb and Gurmukh Gill. Jeffrey Mayer edited the final report.

Everett M. Ehrlich
Under Secretary
for Economic Affairs

SUMMARY

Service Industries and Economic Performance addresses three questions that have troubled economists for more than a decade: whether service-oriented economies can sustain high rates of output growth; whether they can generate large numbers of good jobs; and whether they can compete effectively in global markets.

Compared with a generation ago, U.S. service industries now account for a larger share of real output, and a much larger share of employment. Service inputs also comprise more of the embodied value of all the goods and services Americans produce for final use.

Powerful forces now at work in the United States and elsewhere give these changes overwhelming momentum. Some of these forces are demographic—e.g., women's increased presence in the workforce and the aging of the population. Some reflect long-term public choices—e.g., deregulation, defense downsizing, public education and health care programs. Others arise from the relentless expansion of technical knowledge—e.g., advances in computer and communications technology that have permanently increased demand for a wide range of communications services and triggered explosive growth in the computer software industry.

STRUCTURAL CHANGE AND ECONOMIC GROWTH

Recent experience prompts reasonable doubt about the growth potential of service-oriented economies. Since the 1960s, most G-7 countries have experienced a gradual slowing in average output growth , coupled with steady expansion in the services share of economic activity and, especially in the United States, a sharp decline in service-industry productivity growth.

The conclusion that service economies are naturally sluggish, however, is premature for at least three reasons. First, major strides must still be made in the way we conceptualize and measure service industry performance—especially the magnitude and quality of many service outputs. Slow productivity growth in much of the service sector may be mainly a problem of perception.

Second, many factors blamed for the slowdown in service sector productivity growth are not inherent in the nature of service production itself, and their influence may have weakened over time. Compared with the 1960s, for example, many more U.S. workers

have some post-secondary education. Teenagers and women who entered the labor force with relatively few skills in the 1970s are now more experienced. And new research suggests that, in some service industries, heavy investments in information technology since the mid-1980s have at last begun to yield high productivity returns.

Third, some U.S. service industries have been among the economy's most dynamic—e.g., transportation, telecommunications services, wholesale trade. High-productivity-growth service industries tend to have two things in common: deregulation and consequent exposure to the discipline of increased competition; and a capacity to exploit advances in information technology (IT) either by integrating these advances successfully into existing operations or using them to develop new services. In some cases (e.g., cellular telephony), the industries themselves are recent creations of the IT revolution.

SERVICE INDUSTRIES AND EMPLOYMENT OPPORTUNITY

On average, wage rates in the service sector remain below those in other sectors, but the gaps are narrowing. Also, employment appears to be growing fastest in service industries where average wages are relatively high or in high-wage job categories of traditionally low-wage industries. These findings should help dispel concern that the shift to services will ultimately consign most Americans to undesirable low-wage jobs.

The evidence seems less reassuring, however, on the question of whether service industries are functioning the way manufacturing industries once did, as providers of well-paid jobs for mid-skilled workers.

Similar uncertainty attaches to the capacity of service industries to accommodate economic adjustment. A comparison of employment changes in production job categories in manufacturing and services suggests that, despite rapid overall growth in service employment, service industries have been unable to compensate for job losses by manufacturing workers in the middle range of the blue-collar skills spectrum.

SERVICE INDUSTRIES AND BALANCED TRADE

U.S. experience since 1987 tends to support the widely-held view that service economies are structurally disadvantaged in global competition. Although the United States has built an impressive surplus in services trade over this period, much larger movements in merchandise trade have dominated the nation's overall competitive position.

The capacity of service industries to contribute positively to U.S. trade performance appears to be limited by the fact that services account for a relatively small and remarkably stable share of overall U.S. trade activity. One reason for this may be that many services

marketed overseas (e.g., business, professional, and technical services) are not traded, but delivered directly by local affiliates of U.S. firms.

Given these historic relationships, it seems unlikely that the United States will be able to balance its current account through continued growth in the services surplus without also maintaining high levels of competitiveness in other sectors.

Table of Contents

INTRODUCTION

For at least a decade, economists have peered into America's future and disagreed about the facts and the implications of economic change. Two complementary concerns permeate the dispute, one focused on the role of manufacturing industries in a growing economy, the second on the evolving importance of service industries.

A recent ESA study explored the contribution of manufacturing industries to economic growth and the distribution of employment opportunity.[1] The present study examines developments in service industries.[2] Its purpose is to assess the widely held view that expansion in the service sector's share of overall output and employment is a sign of national economic weakness. More specifically, it attempts to answer the question whether service-heavy economies can grow rapidly over long periods, generate large numbers of high quality jobs, and compete successfully in global markets.

Like the manufacturing study, this study of service industries reflects the continuing mission of ESA's analytic program to examine the determinants of competitive strength at the sector, industry and firm level, and to illuminate relationships between developments at these levels and the performance of the economy at large.

Consistent with this mission, the decision to study services reflects two major considerations. One is the sector's enormity. Service industries account for so much of the nation's output and employment that whatever affects or characterizes them in a general way has major implications for overall economic performance. Slow measured productivity growth in many service industries, for example, underlies much of the present concern about America's long-term growth prospects.

Conversely, in recent decades, the service sector has boasted a number of the economy's most dynamic industries—e.g., business services, communications, transportation, and wholesale/retail trade. Analysis of these industries, like analysis of the most dynamic industries in the manufacturing sector, can reveal the mechanics of the growth process itself.

---

[1] *Engines of Growth: Manufacturing Industries in the U.S. Economy*, Economics and Statistics Administration, U.S. Department of Commerce (forthcoming).

[2] In this discussion, except where otherwise noted, the service sector includes transportation, communications, and utilities; wholesale and retail trade; finance, insurance, and real estate; and other services. The definition excludes government.

Any analysis of service industries, however, must come to terms with a number of daunting problems. The most intractable of these have to do with measurement—e.g., the difficulty of defining and measuring many service outputs and adjusting such measurements for quality improvements and inflation. A section of Part I (below) reviews these issues and recent efforts by ESA statistical agencies to address them.

Other problems arise because of the service sector's heterogeneity. As the following analysis shows, "the service economy" is at least two economies, one marked by rapid productivity growth, the second by much slower productivity growth. To understand the reasons for these differences and the role of services in the growth process, analysis must focus not only on the service sector at large, but on particular industries and firms. Over the past year, therefore, analysts in ESA's Office of Policy Development have been studying a number of individual service industries—e.g., wholesale/retail trade, telecommunication services, insurance, banking. The present study of *Service Industries and Economic Performance* reflects and augments this continuing research.

The study is divided into three parts. Part I assesses recent research on structural change in the U.S. economy and the forces behind this change, and considers whether "service economies" can sustain high rates of overall growth. Part II considers the effects of greater service-intensity on the ability of the U.S. economy to generate large numbers of good jobs and to accommodate adjustments in non-service labor markets. Part III examines the question whether competitive strength in U.S. service industries can by itself compensate for weakness in other sectors and restore balance in the nation's current account.

Part I

STRUCTURAL CHANGE AND ECONOMIC GROWTH

Part I addresses the threshold questions for this study: Is the U.S. economy becoming a post-industrial, service economy? If so, why? And what does the process imply for long-term growth?

RECOMPOSITION OF OUTPUT AND EMPLOYMENT— THE SHIFT TO SERVICES

Output

Indisputably, the U.S. economy today is more service-dominated than it was in 1960 or even 1970. In 1990, service industries supplied about 63 percent of inflation-adjusted GDP, compared with 57 percent in 1960. Table 1 shows that this gradual shift in output share is not unique to the United States, but has occurred in most of the major industrial countries.

Table 1
Services Output as a Share of GDP
($1987)

	1960	1970	1980	1985	1990
			(percent)		
Canada		46.2	52.4	53.5	55.8
Germany	45.8	45.6	49.4	50.6	53.7
France	49.0	50.3	52.4	54.2	56.8
United Kingdom		54.9	57.0	59.9	63.1
Italy		59.4	57.5	58.0	58.8
Japan		57.8	59.7	58.5	59.4
United States	57.2	58.0	61.4	62.2	63.2

Source: OECD, 1994 International Sectoral Database.

The general shift to services reflects rapid real growth in a variety of individual service industries (e.g., business services, wholesale and retail trade, air transportation, and communications) and, within these general categories, the genesis and expansion of

entirely new industries (e.g., computer software, cellular telephony). The overall shift also reflects less dramatic but steady output growth in other service industries combined with slower than average growth in mining, manufacturing, and agriculture.

Comparison of 1977 and 1987 Input-Output (I-O) tables illuminates a further aspect of change in the composition of U.S. economic activity—i.e., the increased importance of services as inputs to production. Table 2 shows that total requirements from service industries for inputs to production needed to satisfy a given amount of final demand for goods and services alike increased substantially from 1977 to 1987.

Table 2
Amount of Service Inputs Required to Deliver $1000 of Goods or Services to Final Demand, 1977 and 1987
($ 1987)

	Final Demand		
Input Requirements[1]	**Services**	**Nonservices**	**Total Economy**
		1977	
Services	1329	328	956
Nonservices	362	1996	971
		1987	
Services	1410	403	1035
Nonservices	263	1762	821

[1] Weighted average based on BEA 1977 and 1987 Input-Output tables (1987 final demand weights).
Source: U.S. Department of Commerce, Office of Business and Industrial Analysis.

On average, between 1977 and 1987, the amount of service inputs needed by U.S. businesses to deliver $1000 worth of goods or services to total final demand increased by $79 (from $956 to $1,035), while requirements for non-service inputs declined by $150. These changes were associated with increases in requirements for a wide range of particular services—e.g., communications, including radio and TV; business, health, and education services; finance, insurance, and real estate.

In several cases, the rate of increase in demand for services was extraordinary. Between 1977 and 1987, for example, the amount of service inputs needed to satisfy a given amount of final demand for computer and office equipment increased six-fold. The communications sector, including radio and TV, increased its service requirement by 20 to 30 percent. The average requirement for service inputs in the economy at large increased by 8.3 percent.

Employment

The view of America as a post-industrial society is based less on shifting output shares than on developments in U.S. labor markets.[3] Between 1958 and 1992, total U.S. employment grew 100 percent (from 66 million to 121 million workers), while employment in service industries grew nearly 140 percent. Service industries (not counting government) accounted for 48 percent of total U.S. employment in 1958, and 61 percent in 1992. In contrast, manufacturing employment declined (relatively) over the period, from 25 percent to 15 percent of the U.S. total.[4] (Table 3)

Table 3
Employment by Industry Sector
(millions)

	1958		1992	
	Jobs	Percent	Jobs	Percent
Total	65.6	100.0	121.1	100.0
Services	31.3	47.7	74.3	61.4
Manufacturing	16.4	25.0	18.4	15.2
All other	17.9	27.3	28.5	23.5

Note: 1958 is the first year for which consistent time-series data are available. "All other" includes agriculture, mining, construction, and government.
Source: Bureau of Labor Statistics.

These industry-based calculations probably understate the number of U.S. service-type jobs, since they do not include workers in non-service industries who are engaged in service occupations. In 1992, for example, about a third of all workers employed in U.S. manufacturing industries were actually doing service-type jobs (e.g., in finance, purchasing, marketing, and administration).[5]

Some observers have suggested that gradual decline in the manufacturing share of U.S. employment coupled with the steadily increasing employment share of service industries may reflect a spin-off of service workers by down-sizing manufacturing firms. If these firms are now purchasing services they once produced for themselves, then some of the

---

[3]For example, Daniel Bell's analysis in *The Coming of Post-Industrial Society, A Venture in Social Forecasting* (New York: Basic Books, 1976*)* focuses principally on past and prospective developments in U.S. labor markets.

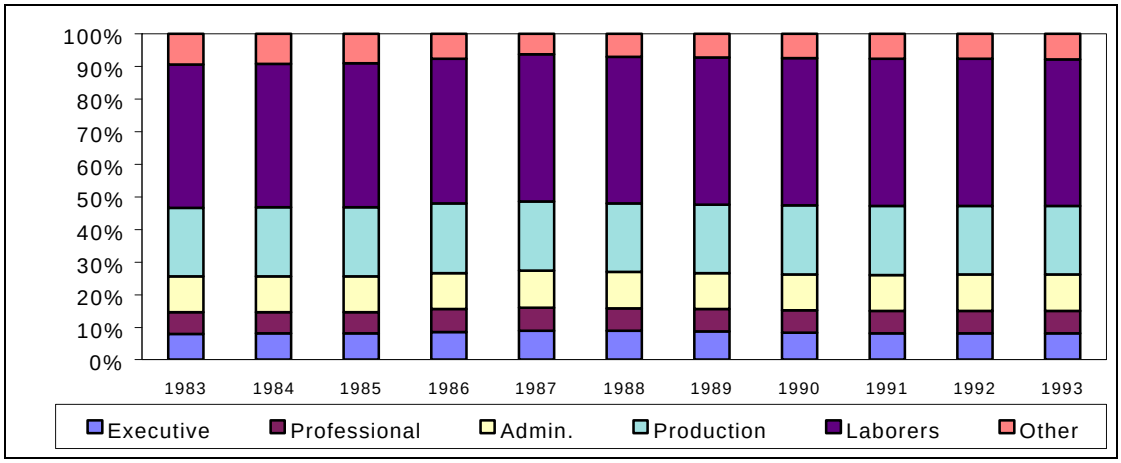
[4]In terms of employment, America had a "service economy" long before the fact began to concern economists and politicians. In 1900, the number of private service industry workers in the United States (6.8 million) was larger than the number of manufacturing industry workers (5.5 million), and the number of agricultural workers (9.4 million) was larger than either. U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States--Colonial Times to 1970* (Washington, D.C., 1975), Part I, 137, Series D 127-141, and 127, Series D 11-25. In a sense, therefore, America moved directly from having an agrarian economy to having a service economy.

[5]John Tschetter, "Restructuring, Churning, and Manufacturing Employment," Economics and Statistics Administration, U.S. Department of Commerce (Draft: August 1994). In 1959, service-type jobs constituted about 25 percent of total employment in the U.S. manufacturing sector. In 1992, about 14 percent of the workers in U.S. service industries had production-type jobs (e.g., as construction workers and mechanics).

reported erosion in manufacturing employment is only an accounting change (and measured labor productivity growth in manufacturing may be overstated).

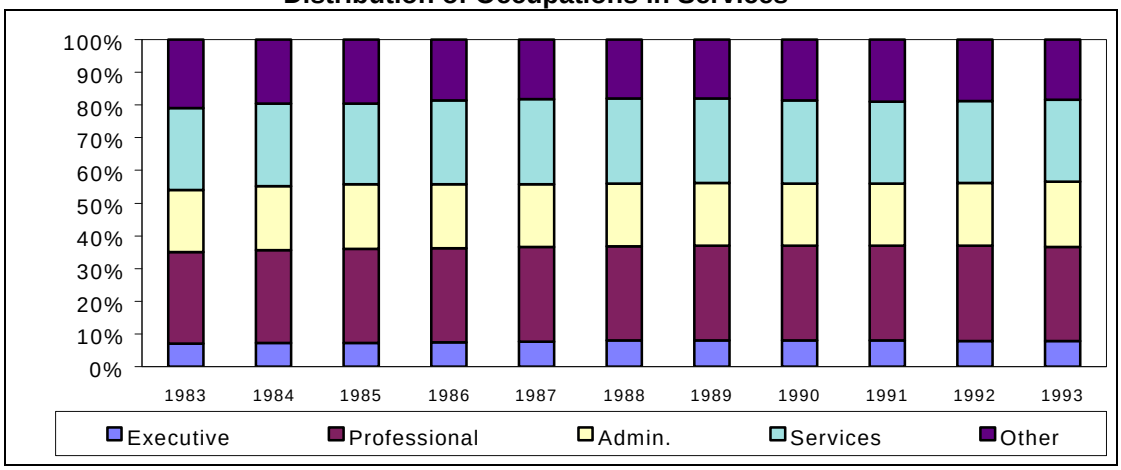
Examination of the occupational distribution of employment in manufacturing and service industries, however, does not sustain the spin-off thesis. Though service industries as a group support a much different mix of occupations than manufacturing industries as a group, the mix of occupations within each sector has been virtually unchanged from 1983 to 1993. (Figure 1 and Figure 2)

Figure 1
Distribution of Occupations in Manufacturing



Source: Bureau of Labor Statistics.

Figure 2
Distribution of Occupations in Services



Source: Bureau of Labor Statistics.

This consistency, and especially the stability in the white-collar share of total manufacturing employment, suggest that manufacturing firms have not become more

reliant on contracting out for support services, and that increases in service employment over the past decade are not a product of employment spin-offs, but are mainly attributable to other factors—e.g., increased demand for service outputs.

This conclusion requires two points of qualification, however. First, relative increases between 1977 and 1987 in the services content of manufactured goods (Table 2) were not matched by comparable increases in nonproduction manufacturing employment. At the margin, therefore, manufacturing firms may indeed have preferred to contract out rather than hire. Second, given the slow growth of service sector productivity, it is likely that productivity grew more quickly in the production categories than in the service-type categories of manufacturing employment over the period. All else equal, therefore, stability in the employment shares across job categories implies that manufacturing firms relied increasingly on externally supplied service inputs to production.

DRIVERS OF STRUCTURAL CHANGE IN ADVANCED ECONOMIES

In the 1950s and 1960s, it was widely believed that the path of national economic development led from pre-industrial dependence on agricultural production, through a period of rapid growth in manufacturing industries, to a post-industrial era in which service industries accounted for predominant shares of output and employment. In this view, the shift from manufacturing to services occurred mainly because, as consumers grew more prosperous, their demand for services grew faster in real terms than their demand for goods.[6]

Recent research, however, refutes the notion of a systematic relationship between standard of living and demand for services. A study of the U.S., Canadian, and French economies, for example, finds that consumer demand for services is income inelastic when relative prices and female labor market participation are considered. The authors contend that as growing numbers of women have taken full-time jobs, thereby raising their families' incomes, services once produced at home have simply appeared in the measured economy. As a consequence, they say, official data overstate the shift to services.[7]

---

[6]Jean-Claude Delaunay and Jean Gadrey, *Services in Economic Thought: Three Centuries of Debate*, translated by A. Heesterman (Boston: Kluwer Academic Publishers, 1992), 86-88, review the literature on this theory. Simon Kuznets argued in the 1960s that income elasticity of demand for services together with lagging productivity growth in the service sector accounted for the long-run rise in the share of employment accounted for by the service sector: *Modern Economic Growth--Rate, Structure, and Spread* (New Haven: Yale University Press, 1966). In the 1970s, Daniel Bell popularized the idea that post-industrial society is a service society in *The Coming of Post-Industrial Society*. Bell noted that certain services grew in importance in industrial society (e.g., transport and distribution). "But in the post-industrial society, the emphasis is on a different kind of service....health, education, research, and government" (15).

[7]David L. Hammes, Jean-Jacques Rosa, and Herbert G. Grubel, "The National Accounts, Household Service Consumption and its Monetization," *Kyklos* (1989), Vol. 42, Facs. 1, 3-15. See also, Erich Gunlach, "Demand Bias as an Explanation for

In addition, economists have argued convincingly that *nominal* increases in the service share of GDP in developed economies are largely a result of price changes. William Baumol, for example, has noted that because many service industries are labor-intensive, their production costs (and output prices) may be affected disproportionately when wage rates rise in the economy at large.[8] Similarly, Irving Kravis, Alan Heston, and Robert Summers have shown that "the apparent tendency of the share of services to rise as a country's income rises disappears" when allowance is made for the fact that service prices are higher (relative to goods prices) in rich countries than in poor ones.[9]

Relative price changes and other measurement problems notwithstanding, powerful forces now at work in the United States and other industrial countries imply actual shifts in the goods-services composition of output and employment. Some of these forces are demographic. For example, women's greater presence in the work force has increased measured (i.e., market) demand for household services. The aging of the population has increased demand for health care and leisure services. In some regions, urbanization and/or suburban sprawl have created new pressure for police, sanitation, and education services.

The shift to services may also be driven by public preferences. For example, economic policies that reduce the rate of domestic investment in plant and equipment per dollar of

---

Structural Change," *Kyklos* (1994), Vol. 47, Fasc. 2, 249-67. In fact, demand elasticities vary across service categories. As their incomes rise, people may indeed consume more restaurant, airline travel, and tourism services, but they may be less likely to use city bus services. They may also demand more luxury goods (e.g., expensive cars, sophisticated computer and communications equipment).

[8]William J. Baumol, "Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis," *American Economic Review*, 57 (June 1967), 415-26. Clearly, Baumol's analysis does not apply to all service industries. Between 1977 and 1991, for example, prices in the transportation, communications, and utilities industries all increased more slowly than U.S. prices in general. Also, many economists believe that output measurement problems result in the consistent underestimation of productivity growth and exaggeration of inflation in the service sector. These problems are detailed below, on page 10. See also Irving B. Kravis, Alan W. Heston, and Robert Summers, "The Share of Services in Economic Growth," in *Global Econometrics, Essays in Honor of Lawrence R. Klein*, edited by F. Gerard Adams and Bert G. Hickman (Cambridge: The MIT Press, 1983), 188-218.

[9]Kravis, *et al*. analyze service prices in rich and poor countries in "New Insights into the Structure of the World Economy," *The Review of Income and Wealth*, 27, 4 (December 1981). See also Robert Summers, "Services in the International Economy," in Robert P. Inman, ed., *Managing the Service Economy* (Cambridge: Cambridge University Press, 1985), 27-48; also William J. Baumol, Sue Anne Batey Blackman, and Edward N. Wolff, *Productivity and American Leadership—The Long View* (Cambridge, MA: The MIT Press, 1989), 118-24; also Robert Summers and Alan Heston, "The International Demand for Services," Discussion Paper 32, Fishman-Davidson Center for the Study of the Service Sector, University of Pennsylvania (January 1988). A further analysis of this issue is contained in Jagdish N. Bhagwati, "Why Are Services Cheaper in the Poor Countries?" *The Economic Journal*, 94 (June 1984), 279-86.

An assessment prepared for this study of the experience of 19 developed and developing counties, however, suggests a contrasting result—i.e., that national prosperity does, in fact, result in increased demand for services. Least squares regression analysis of the relationship between gross domestic product per capita (U.S. dollars, based on purchasing power parity conversion factors) and the services share of gross domestic product (based on national data) in 1990 (or the year closest to 1990 for which data are available) yields a positive coefficient and an R Squared of .60. PPP data were obtained from DRI/McGraw-Hill, *World Markets Country Summaries*, First Quarter 1993.

GDP may tend to reduce the goods share of final demand. Deregulation has spurred growth in U.S. transportation and communications industries. Defense down-sizing and public support for education and research also tend to shift output and employment toward services.[10]

Of all the forces reshaping the U.S. economy, however, the most powerful are knowledge-related. Advances in computer and communications technology, for example, have permanently increased demand for a wide range of communication services and triggered explosive growth in the computer software industry.[11] The effect of technological change is particularly evident in the production process itself. Compared with the 1970s (as noted above in Table 2), service inputs now comprise far more of the embodied value of everything that Americans produce for final use—goods and services alike.

In sum, the writers who a generation ago saw post-industrial society as the destiny of all developed economies may have been right about the direction, but less right about the drivers of economic change. Output and employment shares have indeed shifted toward service industries. However, the factors that give these changes momentum have less to do with prosperity than with demographics, public preferences, and the relentless expansion of technical knowledge. Part I now turns to a consideration of some of the implications of these changes.

ARE SERVICE-HEAVY ECONOMIES DOOMED TO SLOW GROWTH?

Concern about expansion in the services share of output and employment stems largely from a suspicion that as economies become more service-oriented they also become less buoyant. Output and productivity growth rates slow, living standards suffer, and dependence on imported goods increases. The task of deciding whether slow growth is a consequence of the shift to services is complicated by the absence of satisfactory performance measures for many service industries.

---

[10]On effects of defense spending, see U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business* (April 1994), 114. According to the 1987 input-output tables, a dollar's worth of output by the national defense sector required 44 cents of inputs of privately produced goods, 16 cents of privately produced services, and 40 cents of a combination of inputs supplied by government, noncomparable imports, and scrap and used and secondhand goods. Thus, reductions in defense spending tend to reduce the goods and increase the services share of the national economy as a whole.

[11]In some cases, technological innovations may also have an opposite effect. For example, advances in drugs may lessen the need for lengthy consultations with physicians or for hospital care. Attendance at concerts may decline with the advent of improved home audio equipment. Technology may also remove some service production from the measured economy by transforming it to self-service—e.g., in retail stores and ATM machines.

Measuring Service Industry Performance

Performance measurement in service industries confronts two particularly vexing problems. One is the problem of identifying generally acceptable units of output. Second, is the difficulty of adjusting output to reflect changes in quality. In addition, especially in recent years, economists have struggled to account for the effects of large investments in information technology on service industry productivity growth.

Output

Compared with manufactures and other goods, many service outputs are amorphous, elusive, and hard to measure. The value created by some service workers, for example, is realized mainly in customer performance—i.e., by patients who get well, students who learn, manufacturers whose products are cleverly designed and marketed.[12] In other cases, services delivered to intermediate or final users may be bundled inseparably with other services or goods—e.g., by institutions providing multiple financial services or retailers whose marked-up prices cover overhead and marketing as well as product costs. Sometimes, economists simply disagree on which outputs are important. In the case of banks, for example, is output the number of transactions, the value of outstanding loans, or something else?

Uncertainty in the definition and measurement of output carries over to uncertainty in the calculation of prices and productivity growth. For example, in large segments of the service sector (e.g., banking and other financial services, education, health care), outputs must be determined indirectly on the basis of inputs. Hence, by definition, calculated productivity growth in these industries is zero and official estimates almost certainly understate real output growth.[13]

---

[12]Mark K. Sherwood, "Difficulties in the Measurement of Service Outputs," *Monthly Labor Review* (March 1994) 11, discusses these and other sources of difficulty in measuring service outputs. He notes that in the case of services meant to produce some change in recipients, it is not always clear where the value resides. A teacher may teach and be paid for it, whether or not students learn. When a doctor gives medical advice, the patient can expect a bill whether or not he gets well. Thomas M. Stanback and Thierry Noyelle, "Productivity in Services: A Valid Measure of Economic Performance?", *Skills, Wages, and Productivity in the Service Sector* (Westview Press: San Francisco, 1990), 203, discuss the problems of defining units of output in the case of intermediate services (e.g., legal, engineering, advertising services) tailored to the requirements of purchasing firms. They observe that the true productivity of these service providers lies in solving customers' problems rather than in increasing the volume of their own business (e.g., billable hours) per unit of input.

[13]Ideally, real values of gross product originating in an industry are calculated by means of a double-deflation process—the value of an industry's output and the value of its intermediate inputs are deflated separately and real gross product is then calculated as the difference between these two deflated values. However, alternatives to the preferred double-deflation process are used in a number of service industries, because of inadequacies in the source data. For a discussion of these issues, see U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business* (May 1993), 43-46, and Kishori Lal, "Service Industries in the Business Sector of the Canadian Economy," *The Review of Income and Wealth*, 36, 1 (March 1990), 83-94.

Quality

Firms in competitive markets must commit resources to improving products and processes or developing new products, just to keep up. Absent good output measures and the ability to adjust for quality changes, such investments (i.e., additional inputs) may actually reduce measured productivity. Though the challenge of finding generally acceptable quality measures is not confined to services, it is especially complicated in the case of services by some of the problems noted above (e.g., output bundling and disagreement on appropriate units of measure), and by the heterogeneity of service outputs which makes the search for good measures a dogged industry-by-industry exercise.[14]

Impact of Information Technology

In the service sector, the development and diffusion of information technology (IT) raises two general measurement problems. One is the genesis of new service industries and products for which there are no output or productivity measures (e.g., video-on-demand and computerized bill-paying, shopping, and entertainment services). A second, more widely discussed set of problems stems from the fact that massive IT investments by U.S. service firms during the 1980s appeared, until quite recently, to have yielded few, if any, productivity gains.[15] Explanations of this "productivity paradox" have focused partly on the fact that the contributions of IT to product quality, variety, and customer service are not captured in standard productivity measures.[16]

BLS productivity data are available only for a limited set of U.S. service industries accounting for about 40 percent of all service sector employment: See National Research Council, *Information Technology in the Service* Society (National Academy Press: Washington, D.C., 1994), 5.

[14]Sherwood, *op. cit*., discusses difficulties associated with quality measurement in service and other industries.

[15]A number of studies, indeed, have reported negative correlation between IT investment and productivity growth in service industries. For a discussion of these findings, see Erik Brynjolfsson, "The Productivity Paradox of Information Technology," Communications of the ACM, 36(12), 66-77. Several recent studies, however, suggest that IT investments have begun to generate significant productivity returns. For example, Brynjolfsson and L. Hitt, "Is Information Systems Spending Productive? New Evidence and Results," International Conference on Information Systems, Orlando, FLA (1993). Using data from a variety of sources to estimate production functions for 380 large firms, the authors estimate productivity returns to investment at 50 percent for manufacturing firms and 60 percent for service firms, with two- to three-year lags. See also James Brian Quinn and Martin Neil Baily, "Information Technology: Increasing Productivity in Services," *Academy of Management Executive*, 8(3) (1994), 28-51; and Stephen S. Roach, *America's Productivity Revolution*, Special Economic Study M9., testimony to the House Budget Committee (March 1995).

Investment in IT, here, means investment in office, accounting and computing machinery, communications equipment, and scientific, engineering and photo-copy instruments.

[16]Other possible culprits included failure to reengineer work flows to exploit new IT-based capabilities, learning curve effects, poorly educated workers, and the personal nature of many services. On these measurement problems, see *Information Technology in the Service Society*, Computer Science and Telecommunications Board, National Research Council (Washington, D.C.; National Academy Press, 1994), 5-6, 24-51.

Addressing the Measurement Problems

The Census Bureau has been expanding its coverage of service industries since the mid-1980s. Ninety additional service industries and more line of business reporting were included in the 1992 Economic Census. New surveys have been instituted for new service classifications (e.g., the Annual Survey of Telecommunication Services, begun in 1989). Current plans call for an expansion of these efforts in the 1997 Census. In addition, drawing on private sector analysis and advice, Census, the Bureau of Economic Analysis, and the Bureau of Labor Statistics are working together to develop common definitions of service establishment activity.[17]

What the Aggregate Data Show

Measurement problems aside, official data show a gradual decade-to-decade slowing in average growth rates, coupled with steady expansion in the services share of total output and employment, not only in the United States but in many of the advanced economies. (Table 4)

Table 4
Average Growth Rates—Services Sector Output and GDP
Selected Countries

	1961-70		1971-80		1981-90	
	GDP	Services	GDP	Services	GDP	Services
Canada			4.2	5.5	2.8	3.4
Germany	4.5	4.4	2.8	3.6	2.3	3.2
France	5.6	5.8	3.6	4.0	2.3	3.1
United Kingdom	2.8		1.8	2.2	2.5	3.6
Italy	6.2		3.8	3.4	2.2	2.5
Japan			4.8	3.5	4.4	3.1
United States	3.7	3.8	2.7	3.3	2.8	3.1

Source: OECD, 1994 International Sectoral Database.

In the United States, slower overall growth also coincides with sharply declining productivity growth in the service sector beginning in the early 1970s. (Table 5) Given the size of the U.S. service sector, the relative loss of general vitality appears to follow mainly from this slowdown in service productivity growth, aggravated perhaps by the shift of output and employment to service producing industries.[18]

---

[17] Census Bureau efforts to improve service industry data are detailed by James M. Aanestad in "Increased Service Industry Data Collection," a paper presented to the Census Advisory Committee of Professional Associations on April 27, 1995. Aanestad points out that efforts to deal with the difficult conceptual issues of service measurement are still at an early stage.

[18] Taken alone, shifts in output shares have been too small to account for a structural economic slowdown. Also, in recent decades, many of the fastest growing service industries in terms of output, and even employment—e.g., communications, business services—have achieved high rates of productivity growth.

Table 5
Service Sector
Productivity Growth Rates
(Output per employee)

	1961-70	1971-80	1981-90
Canada		1.5	1.0
Germany	3.8	2.6	2.0
France	0.5	2.6	1.9
Italy		0.6	1.4
United Kingdom		1.7	0.8
Japan		2.3	1.9
United States	1.6	0.2	0.1

Source: OECD, 1994 International Sectoral Database.

Regression analysis shows a negative, statistically significant relationship between the rate of growth in real GDP and (i) the service industry share of gross domestic product in the base year and (ii) the percentage point change in this share for a selection of developed and developing countries, over the periods 1970-80 and 1980-90.[19]

Economists have attributed the sluggishness of service sector productivity growth to a range of influences—e.g., workers' skill levels, capital-labor ratios, unproductive IT investments, sub-optimal scale, and government policies.[20] None of these, however,

[19]Because service prices tend to be higher relative to goods prices in rich countries the negative relationship between overall growth rates and service industry output in base years may have more to do with the general state of economic development in a given country than with the size of the country's service sector.

A negative correlation between growth rates and rates of increase in the service share of real output is consistent with recent tests of Nicholas Kaldor's growth laws (e.g., John S. L. McCombie and John R. de Ridder, "Increasing returns, productivity, and output growth: the case of the United States, *Journal of Post Keynesian Economics*, V, 3 (Spring 1983), 373-387. Kaldor's growth laws are discussed in *Engines of Growth: Manufacturing Industries in the U.S. Economy*, Office of Policy Development, Economics and Statistics Administration (July 1995).

Data for these estimates come from the World Bank's *World Tables*. Observations cover 12 developed and developing countries for 1970-80 and 15 developed and developing countries for 1980-90. The service share data are based on real values expressed in the currencies of the individual countries. The dependent variable is the annual rate of change in real GDP over a decade. The independent variables are: X1= the service industry share of GDP in the base year and X2= the percentage point change in the service industry share over the decade. The regression results are as follows:

Constant	11.27
Std Err of Y Est	2.24
R Squared	.31
No. of Observe.	27

	x1	x2
Coeff.	-.116	-.357
t-statistic	(-3.027)	(-2.108)

Values for variables X1 and X2 were found not to be statistically significantly related to each other.

[20]John W. Kendrick, "Productivity in Services," *Technology in Services: Policies for Growth, Trade, and Employment* (1988), 106.

seems to be inherent in the nature of service production itself. None ordains that service-heavy economies must *necessarily* suffer declining overall growth rates.

Some of these influences, indeed, appear to have weakened over time. Compared with the 1960s, many more U.S. workers now have at least some post-secondary education. The wave of teenage baby boomers and women who in the 1960s and 1970s arrived in the labor force with relatively few skills, are now more experienced and more productive. New research shows that, in some service industries, heavy IT investments since the mid-1980s have begun to yield high productivity returns.[21]

In addition, in some traditionally labor-intensive service industries—e.g., education, health and legal services, various personal services, even economic research—it may be impossible to increase productivity without sacrificing client care or product quality. In these areas, slow productivity growth may be a social priority.

What the Industry Data Show

Examination of productivity growth rates in individual service industries reveals a diversity so broad as to suggest: (i) that, as an accounting category, "the service sector" may be an impediment to understanding; and (ii) that the facts and implications of structural change can be gleaned only through analysis at the industry and firm level. Industry-by-industry analysis suggests that the service economy is at least two economies, one characterized by high rates and the second by low rates of (measured) productivity growth.

High-Productivity-Growth Service Industries

Service industries with the highest rates of productivity growth over the past two decades tend to have two things in common. One of these is deregulation and consequent exposure to the discipline of increased competition. Second is a capacity to exploit advances in information technology either by integrating these advances successfully into existing operations or using them to develop new services. In some cases, indeed, the industries themselves are recent creations of the IT revolution.

In ways important to general economic growth, high-productivity-growth service industries bear a striking resemblance to the most dynamic manufacturing industries. They are distinguished from other industries by high rates of productivity and output growth. They invest heavily, if indirectly, in R&D by purchasing the technology embodied in new equipment. And they are linked, in input-output terms, to myriad down-stream production activities, so that benefits of their performance reverberate through the economy at large.

---

[21] See Brynjolfsson and Hitt, *op. cit.*; also Roach, *op. cit.*.

Transportation. Productivity growth in transportation services has run well ahead of the all industry average since 1977. (Table 6) Airline, trucking, and rail transportation firms in particular have been driven by deregulation and empowered by information technology to achieve new levels of operating efficiency and service quality—e.g., better scheduling and schedule keeping, more efficient ticketing, and improved safety.

Table 6
Productivity Growth Rates in Selected Service Industries

	Annual Growth Rate 1977-93
All Private Industries	0.8
Manufacturing	2.2
Services	0.3
High Productivity Growth Industries	
Communication	4.6
Wholesale Trade	3.2
Transportation	1.6
Retail Trade	0.6
Low Productivity Growth Industries	
Legal Services	-3.0
Auto Repair	-2.1
Health Services	-1.7
Personal Services	-1.5

Source: Bureau of Economic Analysis.

Communications. Communications industries, especially telecommunications services, sustained high rates of productivity growth throughout the 1977-1993 period. Again, one reason appears to be deregulation and the court-ordered divestiture of AT&T which increased competition in long-distance wireline service markets. Even more important perhaps, advances in equipment, software, and infrastructure technology (e.g., digital switching, the development of cellular technology, and the proliferation of fiber optic systems) have created whole new industries and host of new communications services. Communications traditionally leads all industries in IT investment per worker, and IT investment as a share of total equipment spending.[22] (Table 7 and Table 8)

[22] Isaac J. Turk and Sabrina L. Montes assess the structure, performance, and competitive prospects of the U.S. telecommunications services industry in *The U.S. Telecommunications Services Industry: Assessing Competitive Advantage*, ESA/OPD Working Paper, 95-4 (September 1995).

Table 7
IT Investment Per Worker—Selected Industries
(dollars)

Sector/Industry	1973	1979	1981	1990	1993
Services	734	1,057	1,155	1,685	2,438
Transportation	102	232	672	1,175	1,533
Communications	12,891	17,109	16,844	14,919	15,538
Wholesale trade	209	745	917	2,400	3,762
Retail trade	44	299	390	647	1,410
Finance, insurance, and real estate	1,381	2,260	2,164	4,839	7,767
Misc. services	329	306	335	600	902
Personal services	598	294	240	670	1,593
Business services	576	400	445	633	1,356
Health services	442	359	329	481	430
Legal services	61	241	521	1,770	1,574

Source: Bureau of Economic Analysis and Bureau of Labor Statistics.

Table 8
IT Investment as a Share of Total Equipment Spending—Selected Industries
(percent)

Sector/Industry	1973	1979	1981	1990	1993	1994
All sectors	12.6	19.1	25.3	37.9	46.7	48.6
Manufacturing	3.9	10.2	17.1	30.3	38.4	40.0
Durables	2.7	8.6	14.9	32.9	42.1	44.6
Nondurables	5.4	12.1	20.0	27.7	34.4	34.9
Services	20.6	27.4	34.9	43.3	52.1	54.2
Transportation	1.2	2.8	12.2	28.2	35.1	36.4
Communications	85.9	87.5	85.7	82.8	81.9	83.1
Wholesale trade	7.1	26.2	39.4	55.8	64.4	66.5
Retail trade	3.7	20.0	30.1	42.3	49.6	51.8
Finance, insurance and real estate	23.4	26.1	28.5	41.9	54.4	56.7
Misc. services	17.9	15.3	21.0	34.2	43.7	46.7
Personal services	30.0	20.3	26.2	38.0	49.7	50.2
Business services	12.5	8.5	11.1	19.8	32.3	38.4
Auto repair, services, and parking	0.1	5.8	14.9	23.8	33.1	36.0
Health services	55.6	50.4	51.8	50.7	55.7	56.2
Legal services	8.6	24.8	38.5	56.8	66.5	68.0
All other sectors[1]	0.2	2.3	6.2	10.7	13.5	14.0

[1] Includes agriculture, mining, and construction.
Source: Bureau of Economic Analysis.

Wholesale/Retail Trade. Since the early 1970s, productivity has grown faster in wholesale/retail trade than in the service sector at large. The gains have been achieved mainly by wholesalers and large retail chains, rather than among small retailers whose productivity appears to have declined. Since 1960, IT investment per worker has increased more quickly in wholesaling and retailing than other major sectors. (Table 7) IT investments also comprise a larger share of total equipment spending in wholesale/retail than in other major sectors, except communications. (Table 8)

Low-Productivity-Growth Service Industries

Service industries with consistently slow productivity growth tend to be very labor-intensive—in some cases (e.g., health and legal services), despite large investments in advanced technology. Industries with the slowest productivity growth between 1977 and 1993 include personal services (e.g., barber shops, laundry and dry cleaning establishments, shoe repair services), auto repair and related services, legal services, and health services. (Table 6) Service industries with negative productivity growth for the 1977-1993 period accounted for 24 percent of service sector output and 36 percent of service sector employment in 1993.

Part II

SERVICES INDUSTRIES AND EMPLOYMENT OPPORTUNITY

Service industries have shown that they can generate large *numbers* of jobs. Part II reviews recent findings on the *quality* of these jobs and considers implications of service industry job growth for the redeployment of American manufacturing workers.

JOB QUALITY IN SERVICE INDUSTRIES

On *average*, service wage rates remain well below those in other sectors and below wage rates in the private economy as a whole, though the gaps have narrowed. (Table 9) A recent cross-industry comparison of *median* wages by economists at the Federal Reserve Bank of Cleveland, however, indicates more dramatic improvement in the relative quality of service jobs. In 1979, the median service wage was $82 less per week than the median manufacturing wage. By 1992, the difference had narrowed to $19.[23]

Table 9
Average Wages by Sector
(dollars per hour)

	1970	1980	1990	1993
All Sectors	3.23	6.66	10.01	10.83
Manufacturing.	3.35	7.27	10.83	11.74
Services		6.06	9.42	10.30
Transportation. & Utilities	3.85	8.87	12.97	13.63
Wholesale & Retail Trade	2.72	5.48	7.86	11.35
Finance Insurance & Real Estate	3.07	5.79	9.97	10.39
Miscellaneous Services	2.81	5.85	9.83	10.23

Source: Bureau of Labor Statistics.

In addition, employment seems to be growing fastest in service industries where average wages are relatively high or in high-wage job categories of traditionally low-wage

[23]Mark E. Schweitzer and Max Dupuy, "Are Service-Sector Workers Mostly 'Hamburger Flippers'?," *Federal Reserve Board Economic Commentary* (February 1994).

industries.[24] Table 10 shows that nearly all of the share growth in U.S. service employment since the 1960s has been concentrated in "miscellaneous services" (i.e., the category that includes new industries). Industries in this group with the highest rates of job growth after 1970 include health services, engineering services, business services, personal services, and social services.

Table 10
U.S. Service Industries—Share of Total U.S. Employment
(decade averages)

	1960s	1970s	1980s	1990s
Total Services	48	51	57	61
Transportation and Utilities	5	5	5	5
Wholesale/Retail Trade	20	21	22	23
Finance, Insurance, & Real Estate	5	5	6	6
Miscellaneous Services	16	20	24	27

Source: Bureau of Labor Statistics, Establishment Survey Data

Between 1970 and 1993, average wages in the miscellaneous services group as a whole increased at a faster rate than average wages in other major service categories, the manufacturing sector, and the economy at large. (Table 9) In 1993, average wages in some miscellaneous service industries—e.g., health and engineering services—substantially exceeded the private sector average. Wages in business services were about 7 percent below the average. Wages in personal and social services, though increasing relatively quickly over the entire 1970-93 period, remained 25-30 percent below average.[25]

A BLS comparison of 1988-93 employment changes and 1993 median weekly earnings in the miscellaneous services and manufacturing sectors points in a similar direction. Service industry employment grew most rapidly in occupations with the highest earnings—i.e., managerial, professional, and technical positions. (Table 11)

[24]Bureau of Labor Statistics, "Employment in Perspective: Earnings and Job Growth," Report 877 (August 25, 1994).

[25]Bureau of Labor Statistics, *Employment, Hours, and Earnings, United States,* Vol. I, II, for 1909-90 and 1981-93.

Table 11
Employment Changes (1988-1993) and Median Weekly Earnings (1993) by Occupation, Manufacturing and Miscellaneous Service Industries

	Total		Manufacturing		Misc. Services	
	Percent of Change	Earnings ($/week)	Percent of Change	Earnings ($/week)	Percent of Change	Earnings ($/week)
Total	100.0	394	-47.5	452	118.8	371
Managerial	30.5	635	-0.9	804	18.4	598
Professional	46.0	617	-3.3	819	43.1	578
Technicians	13.4	495	-0.6	596	9.7	436
Production workers	-20.3	490	-11.4	502	3.4	415
Administrative	6.7	349	-6.0	394	18.6	305
Operators	-19.0	328	-23.5	345	3.5	234
Sales	11.6	314	-0.6	578	2.8	250
Services	32.6	215	-1.2	346	18.6	216

Source: Bureau of Labor Statistics, "Employment in Perspective," Report 877 (August 25, 1994).

These findings should help to dispel concern that transition to a service economy will ultimately consign most Americans to the functional equivalent of flipping hamburgers or taking in each other's wash. Service industries are generating well-paid, high-skilled jobs at an encouraging rate. The evidence seems less reassuring, however, on the question of whether service industries are functioning the way manufacturing industries once did, as providers of well-paid jobs for large numbers of *mid-skilled* workers. As the following section shows, this question also applies to the capacity of service industries to accommodate economic adjustment.

OPPORTUNITIES IN SERVICE INDUSTRIES FOR WORKFORCE REDEPLOYMENT

Net job losses in U.S. manufacturing industries between 1983 and 1993 were concentrated in three occupational categories: administrative workers (175 thousand jobs); production workers (250 thousand jobs); and laborers (425 thousand jobs). Over the same period, net increases in service industry employment in each of these categories surpassed by far the number of jobs lost in manufacturing. Service industries as a group added 3.5 million administrative jobs, 1.5 million labor jobs, and 500 thousand jobs for skilled production workers.[26]

These numbers suggest that, logistical and other impediments aside, administrative workers and laborers who lost jobs in manufacturing industries during 1983-1993 had the opportunity to transfer their training and skills to service industries. For a sizable (and

[26]On decline in the number of manufacturing jobs and increasing service employment, see U.S. Department of Labor, Bureau of Labor Statistics, Establishment Survey Data.

symbolically powerful) group of production workers, however, redeployment may have been more problematic.

Detailed comparison of changes in production employment in manufacturing and service industries during 1983-1993 suggests that manufacturing workers with the most difficult redeployment problem tended to be in the middle range of the skills spectrum—e.g., general machine tool operators, textile machine operators, inspectors, and some metal workers. (Table 12) Workers in these categories account for nearly 66 percent of the net loss in production jobs in manufacturing industries over the period, and an infinitesimal share of net job gains in service industries.

Table 12
Production Workers in Manufacturing and Service Industries

	Manufacturing			Services		
	1983	1993	Change	1983	1993	Change
	(000)		(%)	(000)		(%)
Total jobs	18,818	18,191	-3	58,075	76,675	32
Production jobs	12,228	11,576	-5	8,515	10,634	25
Supervisors	777	684	-12	456	527	16
Construction workers	267	210	-21	292	288	-1
Mechanics	783	740	-6	2,483	2,941	18
Assemblers	68	79	16	0	0	
Inspectors	563	480	-15	77	110	43
Metal workers	632	593	-6	93	96	3
Machine tool-numerical	54	71	31	0	0	
Machine tool-comb.	84	99	18	0	0	
Machine tool-gen'l	777	651	-16	2	13	550
Machine-processing	361	393	9	0	0	
Machine-textiles	947	766	-19	65	77	19
Fabricators	1,873	1,982	6	200	367	84
Vehicle operators & helpers	2,129	1,943	-9	4,049	5,247	30

Source: Bureau of Labor Statistics.

In contrast, prospects seem to have been brighter for production workers in both high- and low-skilled job categories. Table 12 shows that demand for highly skilled production workers—e.g., aircraft assemblers and operators of sophisticated machine tools—actually increased between 1983 and 1993. At the other end of the skill spectrum, net increases in service industry demand for vehicle operators and helpers, and some mechanics dwarf net losses in these job categories in manufacturing industries. In theory, at least, workers in these groups should have had little trouble moving from manufacturing to service jobs.

Part III

SERVICE INDUSTRIES AND BALANCED TRADE

Alarm about post-industrialism stems in part from a concern that without strong manufacturing industries on shore, rich nations with a taste for foreign goods must adapt to chronic trade deficits and rising international debt.[27] In this view, advanced service-heavy economies are structurally disadvantaged in global competition.

U.S. experience seems to support these impressions. For many years the nation has had large merchandise trade and current account deficits. Morover, while the services trade surplus increased sharply from 1987 to 1991, overall improvement in the U.S. trade position during those years was mainly a reflection of improvement in the merchandise account brought about by a weakening dollar and reduced import growth resulting from a slowing economy. (Table 13) As the economy recovered after 1991, the merchandise trade deficit increased steeply, overwhelming continued improvement in the services trade balance.

Table 13
U. S. International Trade
($ billions)

	1987	1991	1993	1994
Private Services				
Balance	12.1	51.4	58.8	59.5
Exports	86.9	152.5	174.2	185.4
Imports	74.8	101.1	115.4	125.9
Merchandise				
Balance	-159.6	-74.1	-132.6	-166.1
Exports	250.2	416.9	456.8	502.5
Imports	409.8	491.0	589.4	668.6
Current Account Balance	-166.3	-7.4	-99.9	-151.2

Source: Bureau of Economic Analysis.

[27]Until recently, the idea that strong manufacturing industries are essential to balanced trade seemed axiomatic. In a speech at Yale University in November 1985, for example, then-Federal Reserve Board Chairman Paul Volker suggested that to eliminate the trade deficit in five years, improvement would have to come "almost entirely in manufactured goods...[assuming that] changes in agricultural and oil trade balance out...."

BALANCE-OF-PAYMENT CONSIDERATIONS

There is little reason to assume a cause-and-effect relationship between an economy's service-orientation and its current account balance. Nations with deficits on current account are also net recipients of foreign investment—i.e., they invest more domestically than they save. Services-oriented economies, however, are not *necessarily* more prone than goods-oriented economies to save less than they invest.

Deterioration in the U.S. current account from 1980 to 1987 was not precipitated by declining performance of U.S. goods producing industries or by the increasing service-orientation of the U.S. economy. Rather, U.S. fiscal and monetary policies resulted in a widening of the gap between domestic saving and investment and a strengthening of the dollar relative to other currencies. Similarly, improvement in the nation's trade balance from 1987 to 1991, reflected macroeconomic changes which narrowed the gap between U.S. saving and investment and reduced the dollar's exchange value, making U.S. goods and services more price competitive in world markets.[28]

Because of U.S. competitive strength in services, a deterioration in the nation's overall trade position after 1991 has shown up in the merchandise trade balance. In general, because the value of global trade in merchandise is so much greater than in services, countries with very large deficits in merchandise trade also have deficits in their current accounts.

COMPETITIVE STRENGTH IN U.S. SERVICE INDUSTRIES

Trade

The competitive strength of U.S. service industries is apparent in both trade and investment patterns. Table 14 summarizes the trade patterns.

[28]Over the period since 1973, the services share of goods and services exports (in real terms) has tended to be higher (after a two-year lag) the stronger the multilateral trade-weighted value of the U.S. dollar (adjusted for changes in consumer prices in the United States and other countries). In effect, exports of merchandise appear to be more responsive to changes in the real foreign exchange value of the dollar than do exports of services. Thus, depreciation of the dollar since 1985 has had a greater stimulatory effect on exports of merchandise than on exports of services. In contrast, imports of services do not appear to be any more or less responsive to real exchange rate changes than are imports of merchandise. Thus, in recent years, imports of services have continued to grow more slowly than imports of merchandise, just as they did when the foreign exchange value of the dollar was stronger.

Table 14
U.S. Exports and Imports of Private Services
(dollars in billions)

	1987	1994	Percent Change
All Private Services			
Balance	12.1	59.5	393
Exports	86.9	185.4	113
Imports	74.8	125.9	68
Travel, Passenger Fares and Other Transportation			
Balance	-7.6	19.3	
Exports	48.0	104.0	116
Imports	55.7	84.6	52
Royalties and License Fees			
Balance	8.3	16.8	101
Exports	10.2	22.4	120
Imports	1.9	5.7	205
Other Private Services			
Balance	11.4	23.4	106
Exports	28.7	59.0	105
Imports	17.3	35.6	105

Note: Because of rounding, balances and percent changes may not be exact.
Source: Bureau of Economic Analysis.

In many individual services, export growth in recent years has substantially exceeded import growth. In travel and passenger fares, the United States had large trade surpluses in 1992-1994 compared with deficits in the mid 1980s when the foreign exchange value of the dollar was much higher. U.S. earnings from international tourism have also benefited from rising national income in the developed nations and declining real costs of international transportation.[29]

From 1987 to 1994, the surplus on royalties and license fees also grew substantially.[30] In 1994, royalties and license fees accounted for 12 percent of U.S. exports of private services compared with under 5 percent of U.S. imports of such services. Similarly, business, professional, and technical services have accounted for larger shares of service exports than of service imports. The fastest growth in service exports has occurred in

[29]Fariborz Moshirian, "Determinants of International Trade Flows in Travel and Passenger Services," *The Economic Record* (September 1993), 239-252. The determinants and economic implications of U.S. international tourism are detailed by Donald Dalton, Susan LaPorte, and Helen Marano, in *International Travel and Tourism—A Source of U.S. Economic Strength*, Working Paper ESA/OPD 95-2 (Economics and Statistics Administration, June 1995).

[30]Royalties and license fees are treated as services in international trade data. Major subcategories include royalties and license fees relating to industrial processes; books, records, and tapes; broadcasting and recording of live events; and franchise fees. In many cases, the U. S. companies engaged in this trade—especially as it relates to the important industrial processes category—are probably in the manufacturing sector rather than in the services sector. Also, a large part of the U.S. receipts on royalties and license fees consists of monies received by U.S. parent companies from their foreign affiliates. Similarly, a large part of the payments consists of monies paid by U.S. affiliates to their foreign parents. See *Survey of Current Business* (September 1993), 132.

areas such as management of health care facilities, legal services, and agricultural services. The fastest growing service imports have been training, legal, and advertising services.[31]

A substantial portion of U.S. services trade occurs as transactions between parent companies and their foreign affiliates. For example, in 1993, transactions between U.S. parent companies and their foreign affiliates, and between U.S. affiliates and their foreign parents, accounted for 42 percent of total U.S. exports of private services other than travel, passenger fares, and other transportation. The comparable share for imports was 38 percent.

Investment

A further indication of the competitive strength of U.S. service companies is the fact that in recent years foreign affiliates of U.S. companies have had larger sales of services to foreign persons than the sales to U.S. persons by U.S. affiliates of foreign companies.[32]

From 1987 to 1992, sales of services by foreign affiliates of U.S. companies increased at roughly the same rate as U.S. exports of services. However, foreign companies increasingly have been providing services to U.S. customers through affiliates located here rather than through U.S. imports. At least in part, this development may reflect the weakening foreign exchange value of the dollar.[33]

CAN SERVICE ECONOMIES BALANCE THEIR EXTERNAL ACCOUNTS?

Services production appears to be an American comparative advantage. Nonetheless, the analysis developed above suggests that, in terms of the current account balance, strength in service exports alone is not a winning strategy for the U.S. economy. To balance its current account and control the growth of foreign debt, the nation must also sustain high levels of competitiveness in other sectors.

The potential of service industries to contribute positively to the nation's trade performance appears to be limited by the fact that services account for a relatively small and remarkably stable share of overall U.S. trade activity. Despite large and growing surpluses in the nation's services account, service industries generated about the same

---

[31] Detail included in *Survey of Current Business*, (September 1993), 122, and in an ESA press release of June 21, 1995.

[32] The affiliates at issue here are nonbank enterprises that are majority-owned by their U.S. or foreign parents.

[33] Sales of services in the United States by U.S. affiliates of foreign companies have grown much faster than U.S. imports of services. In fact, since 1989, the sales of services by U.S. affiliates have exceeded the value of imports of services (based on data for 1989-91).

share (roughly 23 percent) of overall U.S. trade activity in 1994 as they did in 1987. (Table 15)

Table 15
Services Share of U.S. Trade
(percent)

	1987	1994
Exports	29.2	28.7
Imports	18.2	17.1
Exports plus Imports	22.8	22.6

Note: National Income Accounts data; includes private and public transactions.
Source: Bureau of Economic Analysis.

One reason for this may be that many services marketed overseas are not traded, but delivered directly by local affiliates. Returns on this activity show up in the services account as repatriated profits, but the sales themselves are not counted as exports. Though trade in some service categories is substantial (e.g., travel, passenger fares, and other transportation; royalties and license fees), many business, professional, and technical services, are best supplied by establishments located near their customers.[34] The industries that produce these services have been among the most productive and fastest growing in the U.S. economy in recent decades. This suggests that in the future the competitive strength of American service companies may be expressed more readily in foreign direct investment than increased exports.[35]

Assuming the persistence of these relationships, it is hard to imagine a future in which the United States balances its current account through continued growth in the services surplus without significant simultaneous improvement in merchandise trade.

[34]It is difficult to compare service trade and domestic output in individual service categories. In 1992, however, exports (excluding those involving parent companies and their foreign affiliates) were equal only to about 1 to 3 percent of the receipts by U.S. taxable firms in advertising, legal, and computer and data processing services. This estimate is based on U.S. Department of Commerce, Bureau of the Census, *Current Business Reports, Service Annual Survey*: 1992, BS/92, 18, and *Survey of Current Business* (September 1993), 122.

[35]At the moment, however, the service industry share of U.S. affiliate sales activity is even smaller than services share of trade. Of all sales by non-bank foreign affiliates of U.S. companies in 1992, less than 15 percent were accounted for by affiliates of U.S. service industry parent companies.

CONCLUSION

In terms of its workforce, America has had a service economy for most of living memory. In recent decades, however, steady growth in services output and employment coupled with relative declines in manufacturing have prompted questions about the performance of service economies. Economists have searched for the causes of the shift to services and debated implications of the process for growth, employment, and competitiveness.

Service industries have increased their output and employment shares in most advanced economies. Recent analysis refutes the notion that this process is a natural consequence of rising income levels. Nonetheless, other powerful influences—demographic changes, long-term public preferences, and the relentless advance of technical knowledge—give the shift to services an overwhelming momentum.

Implications of the shift are clouded by problems in the data and uncertainty about measures of service industry performance. Slow measured productivity growth in the sector at large suggests that overall growth suffers as service industries expand. But this conclusion may be partly a figment of non- or mismeasurement. A second reason to suspect the evidence is that factors once blamed for slow productivity growth in service industries have become less important. On average, service workers have more education and experience than they once did, and in many service industries large investments in information technology are at last generating high productivity dividends.

Indeed, generalizations about the service economy are inherently suspect. The service sector defies uniform characterization. Some service industries have been among the nation's most dynamic. Like kindred manufacturing industries, they have been important drivers of overall growth.

The shift to services characterizes employment more than output. Service industries have accounted for almost all U.S. job growth since the 1960s, with mixed results for American workers. Many of the new jobs are in high-wage industries and/or job categories, and wages in the service sector overall have risen faster than wages in most other sectors. However, service wages still lag the national average, and service industries offer fewer opportunities than manufacturing industries once did for workers in the middle-range of the skills spectrum to earn middle-class incomes.

The shift to services also affects competitiveness. Strength in service industries has been a major positive factor in the U.S. trade position since the late 1980s. Because services

account for a relatively small and stable share of U.S. trade, however, competitiveness in services is unlikely by itself to remedy the nation's long-term trade imbalance. To achieve that goal, U.S. competitive strength must be both substantial and broad-based.