The Dominance of Producers Services in the US Economy *

The rapid growth of US service sector employment and output has attracted the attention of a number of studies, most of which considered the effect to be detrimental to the well-being of Americans and often saw in it the need for the adoption of industrial strategies. The most recent and widely cited studies in this tradition have been by Bell, Shelp and Bluestone and Harrison,[1] who did much to popularize the concepts "de-industrialization" and "post-industrial society" and related them to the growth of the service sector.

The ideas of these authors are surrounded by a model of historic determinism with wide appeal. This model, very popular during the 1930s, postulates the existence of development cycles which take countries from primary to secondary and tertiary stages. The second and third stages were initiated as productivity growth and consumer satiation in agriculture and manufacturing, respectively, pushed labour into the next highest sector. The chilling prospect for our age is where will the workers go after computers have raised productivity in the tertiary sector and consumer demand reached its limit? The model took on a seemingly special relevance as an explanation of the high unemployment rate during the recession of 1981-82 and the subsequent shrinkage of industries in the rust belt of the United States.

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[1] The references to these writings are: DAVID BELL, *The Coming of Post-Industrial Society: A Venture in Social Forecasting*, New York: Basic Books, 1973; BARRY BLUESTONE and BENNET HARRISON, *The Deindustrialization of America*, New York: Basic Books, 1982; and RONALD SHELP, *Beyond Industrialization: The Ascendancy of the Global Service Economy*, New York: Praeger Special Studies, 1981.

Blustone and Harrison[2] also authored a study of the income distribution effects of the service sector growth and in it developed the concepts of "the vanishing middle class" and the "bimodal income distribution", again attributing much of the phenomenon to the growth of the service sector.

Troughout modern history, the service sector has been identified as the cause of economic troubles. Adam Smith considered it to involve the non-productive use of resources, an idea which was picked up by Marx and Lenin. It resulted in the exclusion of personal service industry output from the national income accounts of the Soviet Union and other socialist economies. As late as the 1960s a British Labour government imposed a special tax to discourage the growth of the industry.

The more recent work of Baumol and Fuchs[3] influenced the thinking of generations of economists with theorems about the low productivity growth of the sector, the resultant upward bias on prices generally and the cost of government in particular. Browne[4] discussed the widespread notion that much of the service sector growth involves "taking in each other's laundry". According to this model, women entering the labour force reduce production in the traditional household and replace it with the same output produced in the market. This process involves an overstatement of economic growth because national income accountants record the increase in the market production but do not note the decrease in the output of households.

In all of these studies, the analysis has concentrated on services for consumers, bought in the market or supplied by government. The most memorable of the analysis by Smith deals with the work done by personal valets and actors. Baumol's widely cited model involves the unchanged productivity of quartets playing the same piece of music through the centuries. Bell, Bluestone and Harris draw heavily on the image of the modern fast food service restaurants. The government supply of education, health and welfare services for public consum-

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[2] BARRY BLUESTONE and BENNET HARRISON, *The Great American Job Machine: The Proliferation of Low-Wage Employment in the US Economy*, Washington: Joint Economic Committee, 1986.

[3] WILLIAM BAUMOL, "Macroeconomics of Unbalanced Growth", *American Economic Review*, 57, 1967, pp. 415-26; VICTOR FUCHS, *The Service Economy*, New York: National Bureau of Economic Research, 1968.

[4] L.E. BROWNE, "Taking in Each Other's Laundry – The Service Economy", *The New England Economic Review*, July/August 1986.

ption is documented and discussed in many studies, supporting the widely held belief in the importance of government services in the overall growth of the service sector.

Interest in producer services is a relatively new phenomenon and is found most notably in the recent studies by Ginzberg and Vojta, Gershuny and Miles; and Riddle.[5] In general, the relative importance of this service sector is inferred from the very rapid growth of the industries called Business Services. Momigliano and Siniscalco[6] in a pioneering study evaluated the quantitative importance of all producer services in the output of the goods sector. Using input-output tables, they measured the direct and indirect input of producer services in the Italian economy and showed that they represented a very large and growing part of the entire service sector.

In this study we measure the level and growth of producer services in the US economy, using an innovative technique which avoids the use of complex input-outpt calculations. The technique permits us to overcome a basic problem of existing government statistics. These statistics only show the total production of financial, insurance, architect, computer, communication, transportation, restaurant and many other services which are purchased by both consumers and industry. Only that share of these services bought by industry can properly be considered to be producer services.

I. The definition and measurement of consumer, government and producer services

The national income accounts of the United States contain a long and consistent time series on the *total size of the service producing sector* of the economy, as measured by its value-added or GNP. This basic time series is shown as the top line in Figure 1. It has produced the 50 percent figure noted in the opening sentence and provoked much of the recent discussion in the literature.

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[5] J.I. GERSHUNY and I. MILES, *The New Service Economy: The Tranformation of Employment in Industrial Societies*, New York: Praeger Publishers, 1983; ELI GINZBERG and GEORGE J. VOJTA, "The Service Sector of the US Economy", *Scientific American*, 244, 3, March 1981, pp. 48-55; DOROTHY RIDDLE, *Service-Led Growth: The Role of the Service Sector in World Development*, New York: Praeger Special Studies, 1986.

[6] MOMIGLIANO, FRANCO and DOMENICO SINISCALCO, "The Growth of Service Employment: A Reappraisal", in this *Review*, September 1982, pp. 269-306.

FIGURE 1

TYPES OF US SERVICES
(1982 Dollars, Percent of GNP)
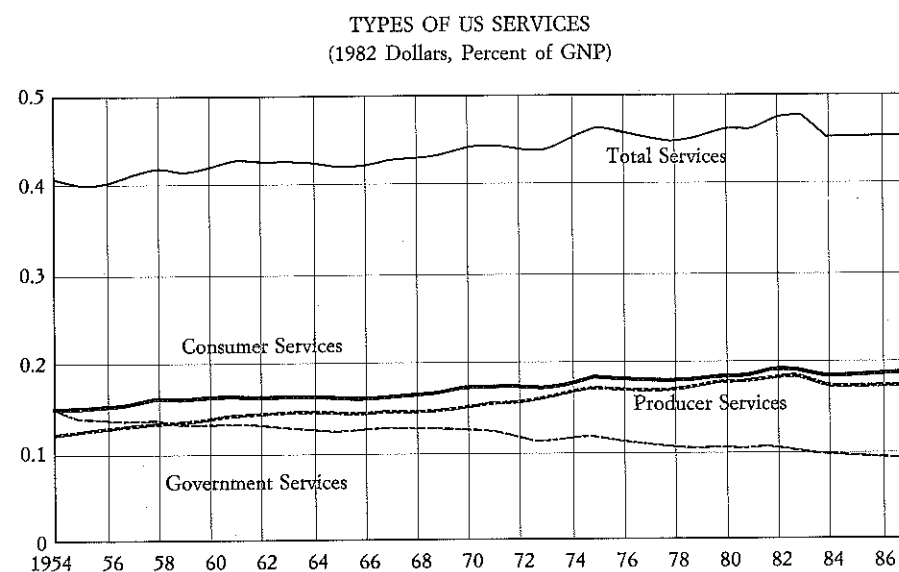
In recent years national income accountants and scholars have been reflecting on the measurement principles and techniques which underlie these figures. However, progress on these matters is slow. The analysis thus far promises to result in marginal improvements only. As a result, revisions based on new data and concepts lack urgency and are not likely to be available for a long time, if ever. The data used here, therefore, are the best available.

Data on the purchase of *consumer services* are available from national spending surveys. These data are reliable and consistent since they serve as the raw data for the calculation of consumer price and expenditure statistics and contain very detailed records on hundreds of goods and services bought by consumers. They provide estimates of spending on such services as finance, insurance, communication, transportation, computers and restaurants.

These data cover expenditures and therefore include the goods components of the final price. Included in expenditures on restaurants, for example, is the cost of the food. To eliminate this goods component and make the series consistent with the GNP concept of

the overall service sector output, it is necessary to determine the value-added of these service industries. For this purpose we drew on data from a major study of the service industries in Canada, where we had estimated the ratio of value-added to gross output of these service industries to be .6. We assume that this figure is the same for US and Canadian service industries and that it has not changed during the period under study. The bias introduced by this assumption is unknown but unlikely to affect the main findings of this analysis.

To obtain information on *government services* it is necessary to divide government expenditure into its two main components, transfer payments and exhaustive spending. The former involves pensions, welfare and unemployment insurance payments. Exhaustive expenditures go for the provision of education, health, defence, justice and general government services, including the administration of the pension and welfare transfers, at all levels of government. The value-added of the government sector as published by the US government is used in this study to measure the value of national product devoted to the provision of government services of this type.

Producer service output is estimated by the subtraction of the consumer and government services from the total service sector output. Producer services therefore contain the output of the industries obviously producing intermediate inputs, like Business Services and Wholesale Services. Importantly, they also include as a residual the output of all those industries widely viewed as serving mainly consumers, like finance, restaurants, hotels and transportation. A large fraction of the output of these industries is used by business and government as input into the further production of goods and services.

It is important to note a likely downward bias in the estimation of producer services. Many of the services produced by government are used as inputs by business. The most obvious are the output of the Departments of Agriculture and Commerce, but most other government departments serve both consumers and business. Unfortunately, it is not possible to determine the relative magnitude of the two. By not allocating any of the government service output to the category of producer services, our procedure biases downward the estimate of the latter.

II. The size and growth of the types of service industries

In Figure 1 the size of the total service sector and its three components are shown as a percentage of GNP and in constant 1982 dollars, for the years 1954-1987. The top line shows the clear upward trend in the basic series. Small fluctuations around the trend are correlated with business cycles. Traditionally these cycles have resulted in greater swings in goods than in service industries' output, which explains why the 1981-82 recession shows the service industries' share at its postwar peak.

Figure 1 indicates that in 1954 consumer and government services each represented 15 percent of GNP while producer services held the smallest share at 12 percent. Since then, the share of government services has been on a rather steady downward trend to a 1987 level of slightly less than 10 percent. Producer and consumer services trended upward and by the end of the period had reached 18 and 19 percent, respectively.

For the purposes of the present analysis, greatest interest lies in rates of growth rather than levels of the types of services. Relative rates of growth are brought out effectively in Figure 2, which uses the growth rates contained in Figure 1 but expresses the share of GNP of each sector in 1954 as an index of 100 and traces the development of this share through time. According to this figure, government services during this period have dropped by one third, total services have risen by 17 percent and consumer services by 32 percent, all expressed as a share of GNP. The growth in the share of producer services by about 52 percent has been the most rapid by a large margin.

III. Causes and effects of changes in share by sector

What have been the causes and welfare effects of these trends in the share of output of the three sectors?

Government services

The decline of the value-added by the government service sector appears to be inconsistent with the widely accepted view that the

FIGURE 2

GROWTH OF SERVICES
(Percent of GNP; 1982 Dollars; 1954=100)
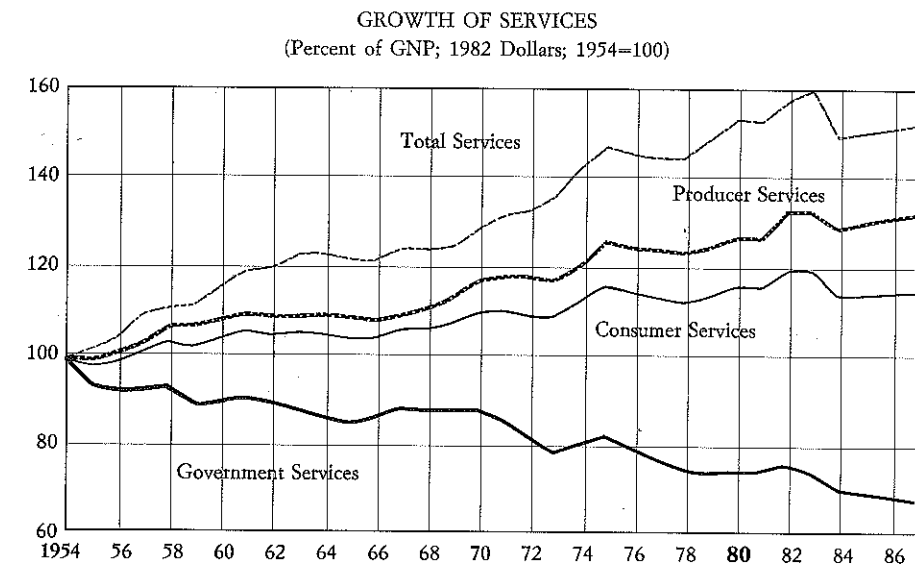
share of government in the economy has been growing rapidly, even during the administrations of President Reagan. The main explanation of the puzzle is found in the fact that transfer payments have increased very rapidly. This development is consistent with the modern theory of government spending associated with the publications of James Buchanan, the 1984 winner of the Nobel prize in economics. It is much easier to target transfer payments rather than exhaustive expenditures to benefit interest groups which repay politicians by voter loyalty and financial contributions. Moreover, transfer payments are determined by existing laws while much of the exhaustive expenditure requires new and politically difficult legislative initiatives.

We can only speculate on the welfare implications of this decline in exhaustive expenditures. On the one hand it may be seen to be desirable since the private sector is capable of supplying most of these services more efficiently than the government. On the other hand, it is also possible that the decline has reached an inefficiently low level, given the more than normal complaints from many users in recent years about the adverse consequences of reduced supplies of education, health, justice, police, patent administration, basic science, defence, airport safety and many others.

We cannot assess here the relative merit of the two views on the decrease in the supply of government. A consensus on this issue has not emerged even among well-informed economists. The main reasons for this are inadequacies in factual knowledge, along with differences in ideological perceptions of the role of government.

However, there are two relatively technical matters which should enter into any debate over the supply of government services. First, the decline in the supply of government services shown in the graphs may be overstated by the way in which government services are measured. By accounting convention it is assumed that output of the sector is proportional to the amount of labour used. As a result, the data do not account for changes in the productivity of this labour. This means that if, for example, administrators of the social security system have become more efficient in the issue of pension checks through the use of computers, the volume of government services supplied has increased more than the data show. There may well have been productivity gains in defence and health care and other services, which bias downward the estimate of supply. On the other hand, reductions in the efficiency of government services production lower the size of this bias. In spite of substantial efforts to quantify productivity in the government sector, no reliable and consistent data are available to correct for the bias in the existing statistics.

Second, the contracting out of government services at all levels has increased the efficiency of production. For example, it is well documented that workers in privately owned garbage collection firms remove about 94 percent more tons per crew person per hour than do workers employed in the public sector.[7] Generalizing from this example suggests that the trend towards privatization generally biases downward the estimate of the quantity of government services supplied. Unfortunately, no estimates of the precise magnitude of this bias are available. However, the public's assessment of the success of privatization may well have an important influence on the future growth of the government service sector employment and output as measured traditionally.

[7] See, for example, MICHAEL A. WALKER, editor, *Privatization: Tactics and Techniques*, Vancouver: The Fraser Institute, 1988.

Consumer services

The demand for consumer services is influenced by two opposing forces. On the one hand, the demand for consumer services is an increasing function of family incomes. The rich are spending larger proportions of their incomes on entertainment, restaurant services, recreation, education, health and similar services.

On the other hand, increases in average income through time have not generated increases in demand for these services which might have been expected from the cross-section evidence. One reason for this is found in the so-called Baumol effect. According to this model, many types of services by their nature require personal contact and therefore productivity of supply cannot be increased significantly by the use of technology. Important examples of such services are entertainment, bus transportation and taxis, barbers and private education and health care. The cost of these services has been rising because the labour needed has to be paid wages that are competitive with those paid in industries in which the application of technology has increased productivity of labour and resulted in increasing wage rates. The increases in the relative prices of these services have a negative influence on demand. The development of new products has made possible the consumption of substitutes for these services. For example, TV and musical recordings have substituted for the services of live entertainers, vacuum cleaners and washing machines have taken the place of domestic workers.

The relatively low growth rate of the share of consumer service demand shown in the graphs represents the net of influences of the growth in average incomes, the rise in relative prices of services and the development of substitutes. However, in a recent study of the demand for consumer services by Hammes *et al.*,[8] the female labour force participation rate has been identified as an important influence on the demand for these services. Econometric results suggest that about 40 percent of the increase in the demand for consumer services has been attributable to this change in behaviour, which in turn has been driven by increases in educational attainment by women and exogenous changes in social norms. The effects of the increases in the female labour force participation rates on the service sector may be

[8] DAVID HAMMES, JEAN-JACQUES ROSA and HERBERT GRUBEL, "The National Accounts, Household Service Consumption and its Monetization", *Kyklos*, 1989.

seen from the finding by Scarfe and Krantz[9] that the demand for high priced restaurants is functionally related to family incomes whereas demand for the output of fast food restaurants is a function of the female labour force participation rate.

The future of the demand for consumer services will be determined by developments which are difficult to predict, such as the introduction of technological substitutes and changes in the female labour force participation rates. However, if the past is any guide for the future, the growth of the demand for consumer services will remain constrained. We may be reasonably confident that its growth, and that of government services, will not embrace an overwhelmingly large proportion of the country's productive capacity. The US economy will not become de-industrialized and face the problems which many have predicted to arise in the wake of such a development.

Producer services

A large and most rapidly growing proportion of producer services are sold by firms which employ persons with high skill levels, such as finance, accounting, legal, advertising, science, engineering, architecture, computer, communications and training of personnel. There are also business services requiring low skills, like janitorial, personnel, wholesale, retailing and personnel services. All of these producer service industries draw on a growing stock of knowledge in the natural, engineering, social and managerial sciences.

It is through the increased use of human and knowledge capital, along with physical capital, that economic development and increasing productivity are achieved. The overwhelming importance of human and knowledge capital in this process has been discovered in the 1960s by Solow, who was awarded the 1986 Nobel prize for this work. The finding was confirmed and strengthened in recent work by Jorgensen and Fraumeni[10] who claim that as much as 80 percent of US wealth consists of human and knowledge capital.

How are these forms of capital introduced into the production process? Why has the accumulation of this capital not resulted simply in an increase in the number of highly skilled workers by manufac-

[9] BRIAN SCARFE and DAVID KRANTZ, *The Accommodation, Food and Beverage Industry in Canada*, Vancouver, B.C.: Fraser Institute Service Sector Project, 1988.

[10] DALE JORGENSON and BARBARA FRAUMENI, *The Accumulation of Human and Non-Human Capital 1948-84*, Cambridge: Harvard University, 1987.

turing firms, where they would be counted as working in the goods producing sector? The answer to these questions may be found in the ideas of Austrian school of economics. This school made much of the proposition that increases in the quantity of physical capital per worker are associated with increased specialization of the production process, which they labelled increased roundaboutness. We now postulate that this same process of specialization accompanies increases in the stock of human and knowledge capital per worker.

Experts in finance, advertising, entertainment, law, science, engineering and similar fields are becoming increasingly specialized. Their expertise tends to be so specialized that it is not needed full time by even the largest manufacturing concerns. However, they can be employed fully by a firm catering to customers throughout a region, country or even the world. Importantly also, there has been the development of specialized firms with producer service expertise which cater primarily to smaller firms in more localized markets which previously have tended to do without them. It is clear that such specialization has been encouraged by technological improvements in communications and travel. The main point here is that the human and knowledge capital deepening and the accompanying patterns of specialization have resulted in a growth in the demand for the services of such firms by the goods producing sector, governments and other producers of services.

An understanding of the phenomenon of producer service growth may be aided by considering the idea that these services end up embodied in goods, where they constitute an ever increasing fraction of the final price of a product. For example, Lee Iacocca[11] has noted in his biography that a larger part of a Chrysler car's costs now consists of spending on medical services for workers than spending on steel. In addition, of course, all of the material inputs used by automobile manufacturers embody growing amounts of producer services, as for example in the many electronic devices. The phenomenon is general. Its manifestation in the extreme is found in the case of computer disks which hold a sophisticated program. This product is counted as the output of the goods industry but the value of services embodied in such a disk may easily represent 90 percent of the market price of the good. At the same extreme end of goods with high amounts of embodied services we find modern medicines and complicated machinery like typewriters, assembled in fully automated factories.

[11] LEE IACOCCA, *Iacocca: An Autobiography*, Toronto: Bantam Books, 1985.

IV. Summary and policy implications

In sum, the preceding consideration lead us to the following, central postulate. The growth in the share of producer services shown in the statistics above is due to the process of human and knowledge capital accumulation and increased specialization in the producer service industries. It has resulted in the phenomenon of ever increasing shares of embodied services in the market value of US goods and the output of government and other service industries.

The implications of this analysis are important for a number of public policy issues. First, the growth of the services sector does not imply the de-industrialization of America in the sense that goods production will cease or even decrease dramatically. The number of people employed by the goods producing sector may continue to fall, but there is no theoretical limit, short of 100 percent, of the proportion of market value of goods accounted for by the workers in the producer service sector. There will not be high unemployment levels because of productivity gains in the service sector and the satiation of consumer demand for services.

Second, while producer service industries typically do not show rapid increases in productivity, they are one of the main sources of productivity gains in the goods producing sector. Third, goods are an effective vehicle for international trade in embodied services. They will permit continued exploitation of the sources of comparative advantage among nations and there is no need to worry that US goods producers will be wiped out by competition from cheap labour in newly industrializing countries. Fourth, there will be no problem with a bimodal income distribution and the vanishing of the middle class. The future middle class is likely to be recruited from workers employed in producer service sector. It will grow more rapidly and offer jobs that are more highly paid and require higher technical skills than the consumer service sector.

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