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# 1
# Introduction

According to measures derived from U. S. Department of Commerce statistics, real output per man in the goods sector grew at the rate of 2.4 per cent per annum between 1929 and 1961. The corresponding figure for the service sector was .7 per cent. Let us postpone for a moment questions concerning the definition of the sectors, real output, and employment and simply note that the sector differential, 1.7 per cent per annum, is a very substantial one. Differences of this magnitude between individual industries would not be surprising, but the comparison in this case is between two huge sectors, each of which accounts for roughly half of total U. S. output.

An intuitive awareness of this differential is currently a source of considerable concern to some economists and policy makers. Those concentrating on economic growth have wondered whether slow productivity advance in the expanding service industries will increasingly act as a drag on the over-all growth of the economy. Others, worried about inflation, ask how price stability can be achieved if annual wage increases are geared to productivity gains in the more progressive industries, and if similar increases are translated into higher prices in industries that fail to gain as rapidly in productivity.

Not everyone views the differential with alarm. When unemployment mounts, the service industries are expected to provide jobs for workers displaced by rapid productivity gains in other industries. The service sector, as we shall see, has indeed accounted for *all* of the increase in employment in the United States since 1947.

These fears and hopes are readily understandable; the pressures to make policy are strong. Unfortunately, with respect to the service industries, there is little measurement or analysis to guide us. In this paper, therefore, we shall try to go beyond the comparison already mentioned to gain a better understanding of the extent of sector differences in rates of change of productivity, of the possible factors accounting for them, and of their implications for future research.

The limitations of this paper should also be noted. First, we rely heavily on data already available, drawing primarily from U. S. Department of Commerce publications and previous studies by the National Bureau of Economic Research. Second, we do not attempt to analyze in detail productivity trends in individual industries, although such analyses will play a major role in the larger study of which this paper is a part. Third, the sector definitions are partly arbitrary. Fourth, the analysis is almost exclusively statistical. Finally, we have not insisted upon equal precision for all calculations. We have not hesitated to use an approximation or even a reasonable guess if these would help to illustrate or clarify an important point.

In short, we have attempted to determine how far available data can illuminate sector trends in productivity, with the objective of discovering what the most important questions are and where future research is likely to yield the greatest return. As befits a "preliminary survey," we regard our findings not as conclusions but as hypotheses requiring further examination.

## *The Two Sectors*

For this study the service sector is defined to include wholesale and retail trade; finance, insurance, and real estate; general government; and the services proper, including personal services, professional services, business services, and repair services.[1] The goods sector is defined to include all other industries—agriculture, mining, contract construction, manufacturing, transportation, communications and public utilities,[2] and government enterprise. What we have called the "goods"

[1]Similar definitions of the service sector may be found in George J. Stigler, *Trends in Employment in the Service Industries*, Princeton University Press, for National Bureau of Economic Research, 1956, and in the Royal Commission on Canada's Economic Prospects *Final Report*, November, 1957.

[2]Transportation, communications and public utilities have often been classified as services, but we have excluded them from our study of the service sector because in their use of physical capital and the nature of their production processes they appear to have more in common with some of the goods industries than with services. Also, productivity in these industries has received more attention in the past than has productivity in the service industries.

sector could alternatively be designated as the "rest of the economy."[3]

This classification, like any other, is partly arbitrary. In one sense, all industries provide services: "Man cannot create material things."[4] But in some industries, e.g., education, medical care, the service aspect is more readily apparent. The service sector consists largely of industries that have not received much attention in the past from economists interested in productivity analysis. Some writers have suggested that these industries typically have slow rates of technological change, while others have argued that the most distinguishing characteristic is our inability to measure output correctly.

A considerable portion of this paper will be devoted to comparisons between the two sectors and between modified versions of these sectors. The modification in the goods sector consists of excluding agriculture and government enterprise, and in the service sector it excludes real estate, households and institutions, and general government. The modified sector comparisons may be of interest because of special difficulties associated with measuring inputs and outputs in the excluded industries.[5]

Table 1 shows the relative importance of the sectors in 1929, 1947, and 1961, as measured by five different variables. The derivations of these measures and of others that will be used in the productivity analysis are explained in Section 2. Several important questions may be raised concerning these variables, and several qualifications are noted, but they are probably adequate for the present purpose.

In broad terms, Table 1 shows that the two sectors are roughly equal in economic importance. There has been a slight tendency for output in the service sector to grow more rapidly than in the goods sector, especially in the postwar period. The most dramatic trend has

[3]The attention given to sector comparisons in this preliminary survey should not obscure the fact that significant diversity can be found within each sector. Even such apparently similar service industries as barber shops and beauty parlors have experienced sharply divergent trends in productivity.

[4]Alfred Marshall, *Principles of Economics*, 8th ed., London, Macmillan, 1920, p. 63.

[5]In agriculture the importance of land and self-employed labor presents special problems. In the other industries the principal difficulties are found in measuring output, but there are problems concerning inputs as well.

TABLE 1

DISTRIBUTION OF SELECTED MEASURES OF OUTPUT AND INPUT
BETWEEN GOODS AND SERVICE SECTORS, 1929, 1947, 1961
(percentage of U.S. total)

| | | Goods | Service | Goods* | Service* |
|---|---|---|---|---|---|
| Gross product (current dollars) | 1929 | 51.9 | 48.1 | 42.2 | 27.3 |
| | 1947 | 54.4 | 45.7 | 44.1 | 28.8 |
| | 1961 | 48.7 | 51.3 | 43.2 | 28.6 |
| Gross product (1954 dollars) | 1929 | 50.8 | 49.2 | 40.8 | 30.4 |
| | 1947 | 52.6 | 47.4 | 45.2 | 28.6 |
| | 1961 | 50.9 | 49.1 | 46.7 | 28.1 |
| Employment | 1929 | 59.6 | 40.4 | 38.8 | 26.7 |
| | 1947 | 54.4 | 45.7 | 41.0 | 29.1 |
| | 1961 | 46.0 | 54.0 | 37.1 | 32.4 |
| Man-hours | 1929 | 56.9 | 43.1 | 36.3 | 30.3 |
| | 1947 | 54.3 | 45.7 | 40.2 | 31.1 |
| | 1961 | 46.2 | 53.8 | 36.7 | 34.5 |
| Labor compensation | 1929 | 54.7 | 45.4 | 47.3 | 33.5 |
| | 1947 | 55.0 | 45.0 | 47.6 | 30.0 |
| | 1961 | 49.5 | 50.4 | 45.2 | 31.1 |

Goods = Agriculture, mining, construction, manufacturing, transportation, communications and public utilities, and government enterprise.
Service = Wholesale and retail trade, finance, insurance and real estate, services, and general government.
Goods* = Goods excluding agriculture and government enterprise.
Service* = Service excluding real estate, households and institutions, and general government.
Note: Percentages have been rounded.
Source: Table A-1.

been in employment, where the service sector's share has increased from 40.4 per cent to 54.0 per cent in little more than three decades. The decline of agriculture and the growing importance of government account for a substantial part of this shift, but not all of it, as may be seen in the modified sector trends. The fact that the service sector's share of labor compensation has not kept pace with the growth of employment is also noteworthy, and will receive more detailed scrutiny later in this paper.

We conclude this section by pointing out that the division of the economy into goods and service sectors on an industry or production basis is quite different from the classification of expenditures as "goods" or "services" in the U. S. government statistics of gross national product. The latter method of classification treats government as a consumer rather than as a producer, excludes the services of wholesale and retail trade from "services," and implicitly includes intermediate business services as "goods" or "services" depending upon the nature of the output of their customers.

The differences in classification are reflected in differences in the trends of the implicit price deflators. Viewed as different kinds of personal consumption expenditures, the price of "goods" rose more rapidly than the price of "services" between 1929 and 1961. The implicit deflator of the "goods industries," however, rose less rapidly than that of the "service industries" over the same period.