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studies of growth and productivity will probably find it necessary to develop auxiliary measures of "output" and economic welfare to be used in conjunction with the gross national product.

SUMMARY

The purpose of this paper is to report some tentative conclusions concerning the growth of the service industries and to indicate some implications of this growth for the economy and for economic analysis.

Between 1929 and 1963 employment in the service sector grew 1.7 per cent per annum faster than in the goods sector. At some point during the past decade the United States became the first "service economy" in the history of the world, that is, the first economy in which more than half of the employed population is not involved in the production of tangible goods. The more rapid growth of services was observed for individual industries as well as the sector aggregates and for occupations as well as industries. This shift represents an acceleration of a trend that has persisted for at least the past century.

Numerous conceptual and statistical problems in the measurement of real output make it difficult to explain precisely why service industry employment has grown so rapidly. The data examined in this paper appear to reject the hypothesis that the growth of real income per capita was a major explanation. The demand for services, compared with goods, may have been slightly more elastic with respect to income (principally because of the low elasticity for agriculture), but this was not an important reason for the shift of employment. Sector differences in the rate of growth of real output were probably very small; differences in the

rate of growth of real output per man were probably very large.

The differential in the rate of growth of real output per man reflects a moderate differential change in productivity, in the sense of efficiency in the use of resources, but this is not the only or major explanation. It also reflects a more rapid decline in hours per man in services, a more rapid rise in the quality of labor in goods industries, and a more rapid rise in capital per worker in the goods sector.

The shift of employment to services has many important implications. The trends discussed here may be offset by other changes that are also taking place in the economy, but they serve to indicate the likely effects of the relative growth of services, other things remaining the same. These trends include:

1. Growing employment opportunities for women and older workers.
2. Growing opportunities for part-time employment and urban self-employment.
3. Growing need for workers with more formal education.
4. Possible decreasing importance of unions and growing importance of professional organizations.
5. Possible trend toward greater personalization of work.
6. Growing importance of small firms.
7. Growing importance of nonprofit organizations (public and private).
8. Declining relative importance of physical capital.
9. Growing stability in employment and, to a lesser extent, in output.
10. Possible increase in cyclical variability in output per man-hour.

In addition to having important implications for the economy, the growing relative importance of the services appears to have implications for economic analysis as well. One problem arises because the consumer frequently plays an

important role in the production of services. This unmeasured input can have significant effects on productivity in retailing, health, education, and many other service industries. A second concept that may require further development is that of labor-embodied technological change. When, as in some services, formal education is important and there is job security, the rate at which advances in knowledge affect productivity will depend in part on how fast labor embodying these new advances can be added to the work force.

Another point concerns productivity and demand. The flow of production in many service industries is uneven, with sharp peaks at particular hours or on particular days, separated by periods of slow activity. Also, the size of the production run (the individual transaction)

is often very small. For these reasons, the analysis of the relation between output and productivity in services will probably have to pay more attention to changes in the timing of demand and to changes in transaction size.

The final implication discussed is the likelihood that real gross national product is becoming increasingly less useful for studies of productivity and economic growth, because at high levels of GNP per capita a large fraction of productive effort is devoted to services (where real output is often very difficult to measure) and to other activities, such as "do-it-yourself," that are not measured at all. In the future, we shall probably find it necessary to develop auxiliary measures of "output" and economic welfare to be used in conjunction with the gross national product.