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# Summary

## *Recapitulation*

The limitations of this analysis, indicated throughout the paper, are re-emphasized now. These results are not offered as conclusions, but rather as indications of possible orders of magnitude, and as guides to the areas requiring more detailed and intensive study than has been attempted here.

1. Between 1929 and 1961 the rate of growth of output per man in the goods sector was 1.7 per cent per annum more rapid than in the service sector.

2. Intrasector shifts in the importance of various industries contributed about .3 or .4 percentage points to this differential. In particular, part of the productivity gain of the goods sector is due to the fact that agriculture, an industry with low gross product per man, became less important over time.

3. The sector differential is reduced by about .3 or .4 percentage points if we compare output per man-hour rather than output per man.

4. A further reduction of .3, or possibly .4, percentage points is evident when changes in labor quality are also considered.

5. The effect of considering capital input as well as labor appears to be small. It may reduce the sector differential by another .1 or .2 percentage points at most.

6. The productivity differential remaining unaccounted for is of the order of .5 per cent per annum. Part of this may be the result of unequal biases in the measurement of real output. The remainder is probably attributable to technological change and economies of scale.

## *Needed Research*

The questions raised in the course of the preceding analysis, and the qualifications attached to the findings, provide some basis for planning future research. There are clearly limitations to working with sector totals, and detailed studies of individual service industries are needed. The criteria for choosing particular industries should include size, analytical interest, policy considerations, and availability of data.[1] In studies of detailed industries, particular attention to the measurement of changes in real output would be desirable.

If output indexes for a substantial number of service industries and subindustries can be developed, it would be useful to examine the relation between output (or employment) and productivity across industries. Is the high correlation between changes in output and changes in productivity that has been found in many studies of manufacturing also characteristic of the service industries? Another question raised in this survey is whether the correlation depends upon the level of industry detail.

The hypothesis concerning a sharp differential trend in labor quality is a challenging one, and research in this area should have implications for a variety of economic problems. If subsequent research confirms the preliminary findings, attention should be directed to explaining why the use of skilled labor grows at different rates in different industries.

The importance of further research on hours appears also to be considerable. With respect to the length of the work week, we need to know with greater certainty what changes have actually occurred, why they have occurred, and what their impact has been on output per man-hour.

[1]The National Bureau of Economic Research has begun studies of wholesale and retail trade, state and local government, health, and personal services. A study of the banking-insurance industries is under consideration.

## *Summary*

Trends in capital per worker and technological change do not emerge in this survey as so all-important as in some previous studies of productivity, but they do deserve further examination. In particular, it would be desirable to explore the hypothesis that there are significant interactions among changes in labor quality, capital, and technology. An understanding of these interactions is probably necessary if we are to explain adequately the complex dynamic process we call increased productivity.