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## A PREVIEW OF THE GENERAL FINDINGS

The National Bureau studies of output and employment cover four-tenths of the American economy, if coverage is measured by national income originating in agriculture, manufacturing, mining, gas and electric utilities, and steam railroads. These industries employed two-thirds of the nation's labor force in 1899, and slightly less than half in 1939. They produced about nine-tenths of the output of the commodity-producing industries and one-tenth of the output of the service-producing industries.

Indexes of output, employment, and output per worker for the six industries combined are as follows:

	1899	1909	1919	1929	1939
Output	100	146	195	283	289
Employment	100	129	153	150	130
Output per worker	100	113	127	189	222

Perhaps the outstanding finding is that output nearly tripled during the four decades. We should like to take into numerical account also two important developments our index of output does not reflect. On the one hand, large improvements in quality of product appear to have occurred, and on this score the index has a downward bias. On the other hand, production within the household declined substantially, and on this score the index has an upward bias. If, as we believe, the former tendency has been definitely the stronger, output may have considerably more than tripled between 1899 and 1939.

Employment in the six industries was only a third larger in 1939 than in 1899, and even this moderate increase was completely offset by the decline in working hours. That is, while output tripled, man-hours of employment remained the same.

Until 1929, the growth of output was large—3.5 percent a

year on the average; it then fell sharply, and a decade later recovered only to the 1929 level. Employment had already reached its peak by 1919—in our decennial index—but again the effect of the protracted depression of the 'thirties is plain: employment fell more than an eighth and there was widespread involuntary shortening of the work week. Of the three indexes, output per worker alone does not show a break in trend: the advance in the fourth decade was larger than in two of the three preceding decades.

The major shift in the composition of output was between agriculture and manufacturing. Agriculture's share of the output of the six industries (measured by 'value-added') fell from 31 percent in 1899 to 16 percent in 1939, and manufacture's share rose from 49 to 62 percent. A corresponding shift took place in the labor force: agriculture had 56 percent of the labor force of the six industries in 1900 and 37 percent in 1940; meanwhile manufacture's percentage rose from 32 to 49.

When we examine the outputs of consumer goods, we find—as we expect—growth in the relative importance of consumer durables. But we also find, and this is rather surprising, that the output of food and clothing appears to have increased about as rapidly as the output of all commodities. The latter growth reflects the shift to more expensive commodities, the additional processing of food before it leaves manufacturing, and the decline in the amount of food grown and consumed on farms.

Changes in output per worker in a group of 32 manufacturing industries are analyzed in some detail. The change in output per worker (and also in output per man-hour) appears to be very erratic during short periods—ranging from -3.2 percent per year (in 1931-33) to 5.4 percent per year (in 1937-39) within a single decade—despite the relative steadiness of the long-term growth. Nor do individual industries maintain stable positions with respect to the group: the rank of an industry in the hierarchy of increases in output

per worker (or per man-hour) fluctuates widely from period to period.

Changes in output per worker are not to be confused with changes in efficiency—changes in output per unit of all productive services—although over long periods we expect a fair correspondence between them. A very tentative measure of changes in efficiency confirms the impression of great technological advance obtained from data on output per worker, but suggests that changes in output per worker is an unreliable guide to changes in the efficiency of industries where labor costs are a relatively small part of total costs.