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Concluding Observations

Where do the National Bureau studies of employment and output fit in the broad program of economic investigation? That program may be divided into three principal branches. The first has for its subject the contemporary structure and operations of the economic system; the second, the short term fluctuations in the level of activity of the system; and the third, the long term growth or decline of the economy and its parts. It is primarily in this third branch of economic development that the National Bureau studies we have been discussing fall.

The theory of economic development is concerned with the long term movements in (1) aggregate output and its composition; (2) the quantity, composition, and efficiency of use of resources; and (3) the distribution of income. These laconic rubrics conceal more than they reveal the variety of problems and findings in the theory of development. A brief elaboration of some of the material discussed in our survey of the productivity studies may provide a more informative, if less comprehensive, characterization. We shall give four examples.

1) It is a familiar and important datum of economic discussion that the output of commodities has risen rapidly relative to population, but the National Bureau studies provide us with much more precise measures of this development than were hitherto available. They indicate that output of commodities per head of population increased by three-quarters between 1899 and 1929, then fell sharply and did not fully recover, let alone approach an extrapolation of the previous upward trend, during the 'thirties. The increase in the proportion of the labor force in the service industries argues that the increase of commodities to 1929 was not obtained by producing fewer services. The substantial movement of activities and of labor from the household to the market supports this inference, for in all probability the output of services per

worker of given quality is higher in the market than within the household.

2) The persistent decline in the percentage rate of growth of individual industries is another finding of general significance. Established industries grow at a diminishing rate or actually decline, and the steady growth of aggregate output has been due in part to the rise of new industries, and not merely (as we might intuitively expect) to a canceling of increasing and decreasing rates of growth. This helps to explain the pessimistic bias of long-term forecasts. The great industries of the day are usually growing slowly or declining —each generation has its turnpikes, clippers, railroads, or trucks. New industries are necessarily small, and most never amount to much. Arithmetic tells us that aggregate output can grow at a steady pace despite these phenomena, but arithmetic is unheeded because it tells us that almost any movement of aggregate output is consistent with those of individual outputs. The studies of economic development are decidedly more informative.

3) If we look at the composition of output from the viewpoint of consumer wants rather than from the viewpoint of industries, we find further reason to distrust intuition. When John Stuart Mill contemplated the prospect of a stationary state he found less cause for concern than his predecessors had: if men could satisfy their stable need for bread with less effort, they could devote more attention to philosophy. Apparently this is not the whole choice; had it been, controversy might now be raging over the five-hour week. Mill's bread was really a sack of flour on the grocer's counter; it is now an enriched slice (baked by 1/250 of the labor force) suitably presented in a restaurant (employing 1/40 of the labor force). The workman has decided to work and earn beyond his basic wants, in part because he has additional wants and in part so his wife too can philosophize.

4) It is a commonplace of economic thinking that advanced industrial countries become nations of wage earners

employed by large industrial units. The tendency in this direction was indeed long and pronounced, but it has not maintained itself in recent decades. If we roughly classify as independent proprietors and employees of small scale enterprise the labor force in agriculture, the professions, trade, and personal services, the proportion declined from seven-tenths in 1870 to one-half in 1920, but has since risen slightly.* The intellectual father of modern capitalism described it as a nation of shopkeepers; he was wrong, for it was a nation of farmers. But should the service industries continue their rapid rate of growth, capitalism may yet develop a nation of shopkeepers.

In 1798 Thomas R. Malthus advanced the theory that the mass of mankind—in advanced countries—could live well only if the population did not tend to grow rapidly (which it did). This theory ruled almost unchallenged in economics for a quarter century and exerted strong influence for at least another quarter century. Yet it was wrong in at least some respects even in the early decades (population grew at a large, relatively constant geometrical rate in England), and it was wrong in all important respects by the middle of the century.

More recently the Malthusian theory has been almost exactly reversed in one version of the 'stagnation' theory: that the mass of mankind—in advanced countries characterized by free enterprise—can live well (under a moderate balanced budget) only if the population grows rapidly (which it won't). It is to be hoped that the stagnation theory will meet a better scientific fate than the Malthusian doctrine. We need not wait a generation or more to begin the task of accepting or rejecting an important theory on the basis of careful empirical tests. The studies reviewed in this essay should prove helpful in making these tests.

*Daniel Carson, *Industrial Composition of Manpower in the United States, 1870-1940* (unpublished report submitted to the Conference on Research in Income and Wealth, November 1946), Tables 1-2.

TABLE A

Indexes of Output in Six Industries, 1899-1940

(1929: 100)

	MANUFACTURING	AGRICULTURE	MINING	ELECTRIC LIGHT & POWER	GAS	STEAM RAILROADS*
1899	27.5	69.4	25.7		15.8	31
1900	28.0	70.1	27.8			35
1901	31.6	68.7	29.3		22.7	37
1902	35.4	71.5	30.6	3.6	21.4	40
1903	36.3	72.2	34.4		24.0	44
1904	34.1	75.7	35.5		25.6	45
1905	40.7	75.0	39.6		26.7	48
1906	43.7	81.9	41.1		29.8	54
1907	44.2	76.4	44.5	7.5	32.8	60
1908	36.5	77.8	41.6		34.8	56
1909	43.4	77.1	47.3		37.7	56
1910	46.2	79.2	50.1		39.8	65
1911	44.2	81.2	49.4		41.8	65
1912	50.8	85.4	53.0	13.0	46.6	67
1913	54.4	82.6	55.8	13.6	48.5	75
1914	51.1	89.6	51.9	15.2	51.1	72
1915	59.9	89.6	56.6	16.6	52.3	69
1916	71.2	82.6	65.3	21.1	58.8	82
1917	70.6	86.1	68.9	24.5	64.7	96
1918	69.8	90.3	69.4	31.4	63.8	99
1919	61.0	86.8	60.2	36.0	67.2	93
1920	66.5	90.3	69.7	39.3	69.0	102
1921	53.3	81.9	57.1	36.3	62.9	78
1922	68.4	90.3	61.4	41.2	67.9	83
1923	76.9	91.7	84.6	50.0	73.7	98
1924	73.1	95.1	79.7	54.9	76.5	92
1925	81.9	95.8	82.5	63.5	77.8	97
1926	86.8	101.4	89.5	73.5	85.8	102
1927	87.1	97.9	91.8	81.7	90.4	98
1928	91.2	102.1	91.8	89.5	93.8	98
1929	100.0	100.0	100.0	100.0	100.0	100
1930	85.4	100.7	88.2	103.5	101.4	86
1931	72.0	104.2	73.5	101.9	98.9	69
1932	54.1	100.0	59.1	92.7	92.5	52
1933	62.6	97.2	64.0	92.8	88.4	55
1934	69.2	83.3	69.7	99.2	92.0	60
1935	82.7	92.4	75.3	108.2	95.5	63
1936	97.0	93.1	88.4	123.4	100.0	76
1937	103.3	106.2	99.5	136.3	103.7	81
1938	81.0	105.6	85.1	136.8	101.1	66
1939	102.7	110.4	94.1	151.6	106.3	75
1940		110.6		167.7	115.3	

SOURCES: Manufacturing: Fabricant, *Employment in Manufacturing, 1899-1939*, p. 331.
Agriculture: Barger and Landsberg, *op. cit.*, p. 21.
Mining: Barger and Schurr, *op. cit.*, p. 14.
Electric Light and Power: Gould, *op. cit.*, p. 42.
Gas: *ibid.*, p. 103.
Railroads: Unpublished study by Barger.

*Year ending in June through 1916, thereafter year ending in December. Index for year ending December 1916 is 87.

TABLE B

Indexes of Employment in Six Industries, 1899-1940
(1929: 100)

	MANUFACTURING	AGRICULTURE (1930: 100)	MINING	ELECTRIC LIGHT & POWER	GAS	STEAM RAILROADS*
1899	53.5					55
1900	55.6	91.1				60
1901	58.3					63
1902	63.1		73.3	10.4	40.4	70
1903	65.2					78
1904	61.5					77
1905	68.4					82
1906	71.7					90
1907	74.9			16.3	53.9	99
1908	66.3					85
1909	74.3					89
1910	77.5	101.8				100
1911	77.5					99
1912	80.7			27.1	68.3	102
1913	81.3					109
1914	78.1					101
1915	81.8					92
1916	95.7					98
1917	102.1			36.1	77.4	106
1918	104.3			39.0		112
1919	100.5			41.1	79.4	116
1920	100.5	103.2		45.2		123
1921	77.0			46.8		101
1922	85.6			51.6		98
1923	97.9			66.9		112
1924	90.9			71.8		106
1925	93.6			73.6	91.7	105
1926	95.7			82.8		107
1927	93.6			85.9		105
1928	93.6			91.9		100
1929	100.0		100.0	100.0	100.0	100
1930	86.6	100.0		103.3	94.2	90
1931	73.3			96.1	89.4	76
1932	62.6			83.7	82.1	62
1933	69.0			78.5	85.6	59
1934	80.7			81.6	90.4	61
1935	85.6		58.8	83.7	91.3	60
1936	93.0		68.9	89.8	97.2	65
1937	102.1		71.9	96.3	97.4	68
1938	85.6		59.0	93.2	94.6	58
1939	94.1		60.6	92.7	95.3	60
1940		86.9		94.9	99.3	

SOURCES: Manufacturing: Same as Table A (wage earners only).
Agriculture: Barger and Landsberg, *op. cit.*, p. 246 (farmers and adult male laborers, 1940 figure added).
Mining: Barger and Schurr, *op. cit.*, p. 343. (Manhours, not strictly comparable with output index.)
Other: Same as Table A.

*Index for year ending December 1916 is 101.

TABLE C

Indexes of Employment per Unit of Output in Six Industries, 1899-1940

(1929: 100)

	MANUFACTURING	AGRICULTURE (1930: 100)	MINING	ELECTRIC LIGHT & POWER	GAS	STEAM RAILROADS*
1899	196					175
1900	198	131				169
1901	184					172
1902	178		240	318	189	175
1903	182					179
1904	180					172
1905	171					170
1906	167					166
1907	171			240	164	166
1908	184					151
1909	173					158
1910	171	130				155
1911	176					152
1912	159			231	147	152
1913	151					146
1914	155					140
1915	137					133
1916	135					119
1917	145			162	120	111
1918	151			136		113
1919	165			125	118	124
1920	153	115		125		120
1921	145			139		130
1922	125			134		119
1923	127			141		114
1924	125			136		114
1925	116			119	118	108
1926	112			114		105
1927	108			105		106
1928	104			103		102
1929	100		100	100	100	100
1930	102	100		99.8	92.9	104
1931	102			94.3	90.4	110
1932	116			90.3	88.8	119
1933	112			84.5	96.8	107
1934	118			82.2	98.3	102
1935	104		78.1	77.3	95.6	96
1936	96		77.9	72.7	97.2	85
1937	100		72.3	70.6	93.9	84
1938	106		69.3	68.1	93.6	87
1939	92		64.4	61.1	89.7	81
1940		79		56.6	86.1	

SOURCE: Derived from Tables A and B.

*Index for year ending December 1916 is 116.