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Chapter Author: Clarence D. Long

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CHAPTER 4

THE LABOR FORCE AND EARNINGS OR INCOME IN DIFFERENT CITIES, STATES, NATIONS, AND INCOME GROUPS AT A GIVEN TIME

"The goal of war is peace, of business, leisure."
ARISTOTLE, *Politics*

Labor Force and Earnings among Large Cities

THE two investigations by Paul Douglas examined the moment-of-time relationship between labor force and earnings for 38 large United States cities in 1920 and 1930.

Following Douglas' practice of standardizing the labor force participation rates of each of the 38 cities by the composition of the population of Chicago in 1930,[1] this study tested his results by similar correlations among the same cities for a prior census date—1900—and for two subsequent census dates—1940 and 1950. Because of the difficulty presented by the probability of varying degrees of overcount or undercount in 1890 and 1910 in the different cities, these dates were omitted. The test revealed the following:

1. For all the census dates except 1950 there was a tendency for the total labor force participation of both sexes, standardized for age and sex, to be inversely associated with real earnings per equivalent adult-male worker (Table 1 and Chart 1). That is, in those cities where average earnings tended to be high, labor force participation tended to be low. The association was significant on the 95 per cent ($\pm 2\sigma$) level. In 1950 there was virtually no association between labor force and earnings. There were positive associations for some age-sex groups, but these were either insignificant or significant on the lower level. Adjusting real earnings to a 48-hour workweek basis—to eliminate differences in earnings due to longer or shorter workweeks—modified the results very little, and Chart 1 omits this comparison. Unstandardized, the labor force was not as closely associated with earnings as it was when standardized, but, even so, the association was significant on the 95 per cent level for 1900 and 1940 and on the 68 per cent level ($\pm\sigma$) for 1930. Thus the test generally corroborated Douglas' findings.

2. Much the same inverse relationship to earnings was found when the participation of males and females was examined separately, being

[1] See Chapter 3 in the section on *The Method.*

TABLE 1

Correlation between Labor Force and Earnings, 38 Large Cities, United States, Census Dates, 1900–1950

(Coefficients of correlation between variations in rate of participation in labor force—per 1,000 persons aged 14 and older of same age-sex group—and intercity differences in annual earnings per adult-male equivalent in previous year.) [a]

A. LABOR FORCE BY SEX—REAL AND MONEY EARNINGS

	Both Sexes	*Males*	*Females*	*Both Sexes*	*Males*	*Females*
	(STANDARDIZED) [b]					
	Real Earnings			*Real Earnings on 48-Hour Week Basis*		
1900 (June) [c]	−0.53 **	−0.24 *	−0.51 **	−0.50 **	−0.22 *	−0.50 **
1920 (Jan.)	−0.70 **	−0.47 **	−0.65 **	−0.63 **	−0.48 **	−0.56 **
1930 (April)	−0.63 **	−0.42 **	−0.54 **	−0.59 **	−0.52 **	−0.46 **
1940 (April)	−0.59 **	−0.40 **	−0.50 **	−0.54 **	−0.31 *	−0.49 **
1950 (April)	+0.29 *	+0.22 *	+0.13	...	...	...
	(UNSTANDARDIZED)					
	Real Earnings			*Money Earnings*		
1900 (June) [c]	−0.45 **	−0.26 *	−0.49 **	−0.45 **	−0.26 *	−0.49 **
1920 (Jan.)	−0.10	−0.07	−0.59 **	−0.10	−0.07	−0.59 **
1930 (April)	−0.28 *	−0.31 *	−0.55 **	−0.31 *	−0.33 **	−0.56 **
1940 (April)	−0.45 **	−0.35 **	−0.57 **	−0.45 **	−0.36 **	−0.52 **
1950 (April)	−0.01	+0.09	−0.04	+0.07	+0.11	+0.04

continued on next page

TABLE 1, *continued*

B. LABOR FORCE BY SEX AND AGE GROUP—REAL EARNINGS

	14	*15*	*16*	*17*	*18–19*	*20–24*	*25–44*	*45–64*	*65 and Older*
					MALES				
1900 (June) [c]	...	...	...	...	...	...	−0.004	−0.37 **	−0.42 **
1920 (Jan.)	−0.64 **	−0.61 **	−0.36 **	−0.27 **	−0.26 *	−0.26 *	−0.07	−0.32 **	−0.60 **
1930 (April)	−0.61 **	−0.69 **	−0.60 **	−0.41 **	−0.18 *	−0.17 *	−0.05	−0.28 *	−0.42 **
1940 (April)	−0.30 *	−0.56 **	−0.70 **	−0.70 **	−0.60 **	−0.37 **	−0.04	+0.10	−0.43 **
1950 (April)	+0.27 *	+0.18 *	−0.10	−0.23 *	−0.01	+0.11	+0.17 *	+0.04	+0.18 *
					FEMALES				
1900 (June) [c]	...	...	...	...	...	...	−0.46 **	−0.46 **	−0.44 **
1920 (Jan.)	−0.49 **	−0.36 **	−0.07	+0.12	+0.16 *	−0.11	−0.61 **	−0.62 **	−0.71 **
1930 (April)	−0.58 **	−0.48 **	−0.30 *	+0.001	+0.31 *	+0.13	−0.53 **	−0.56 **	−0.56 **
1940 (April)	−0.37 **	−0.64 **	−0.54 **	−0.41 **	+0.06	+0.8	−0.53 **	−0.46 **	−0.30 *
1950 (April)	+0.37 **	+0.28 *	+0.07	+0.08	+0.25 *	+0.15	−0.15	−0.05	+0.31 *

The 38 cities: Atlanta, Baltimore, Birmingham, Boston, Bridgeport, Buffalo, Chicago, Cincinnati, Cleveland, Columbus, Dallas, Denver, Detroit, Houston, Indianapolis, Kansas City, Los Angeles, Louisville, Memphis, Milwaukee, Minneapolis, Newark, New Haven, New Orleans, New York, Norfolk, Omaha, Philadelphia, Pittsburgh, Portland (Oregon), Providence, Richmond, Rochester, St. Louis, St. Paul, San Francisco, Scranton, Seattle.

Source: Appendix A. *Census of Manufactures, 1900*, Vol. VIII, Part 2, Table 2. *Census of Population: 1940*, Vol. III, *The Labor Force*, Part 1, Table 15; *1950*, Vol. II, *Characteristics of the Population*, Part 1, Table 185. Paul H. Douglas, *The Theory of Wages*, Macmillan, 1934, pp. 269–294, 514. Erika H. Schoenberg and Paul H. Douglas, "Studies in the Supply Curve of Labor," *Journal of Political Economy*, February 1937, pp. 45–79. *Bulletin 694*, pp. 98–99, and *Monthly Labor Review*, February 1951, p. 153, Bureau of Labor Statistics.

* Significant on the 68 per cent ($\pm\sigma$) level.
** Significant on the 95 per cent ($\pm 2\sigma$) level.

[a] Appendix D explains the earnings data. For 1939 and 1949 earnings are given per male worker 14 and older, rather than per adult-male equivalent worker.
[b] Standardization of the labor force for age or age-sex composition is based on the population of Chicago in 1930. See Chapter 3 for explanation of the method and its limitations.
[c] Birmingham, Houston, Dallas, and Norfolk were not covered by the census in 1900. The study omitted 1890 and 1910 because of the difficulty presented by the probability of varying degrees of overcount or undercount in the different cities in these years.

higher for females than for males, especially for the unstandardized comparison; but only in 1920 did the association for males (unstandardized) fail to be significant on at least the lower level. The associations were higher in 1920 and 1930—the years studied by Douglas—than in 1900 or 1940, but on the whole they appeared to remain surprisingly constant over all four decades.

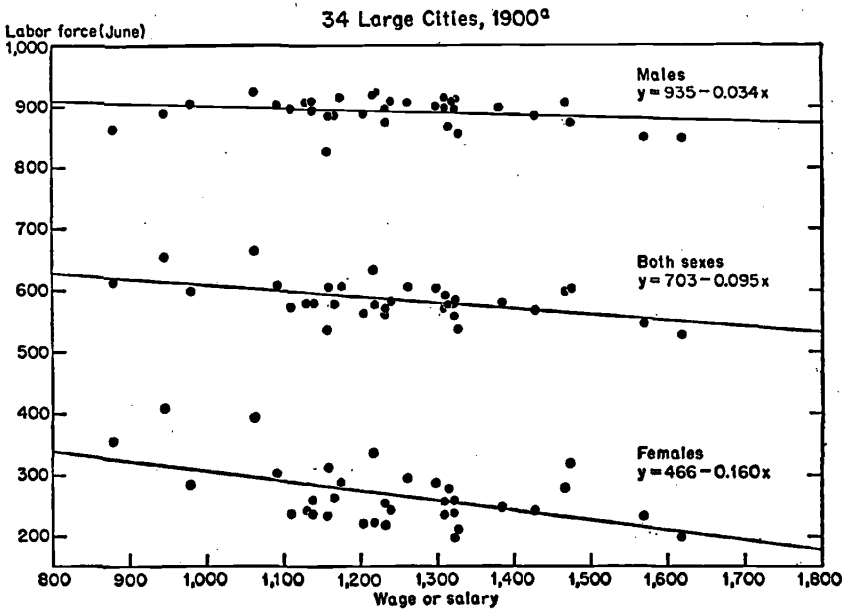
3. In the various age-sex groups the correlation with real earnings of males was far from uniform. Through 1940, it appeared fairly high for boys, elderly men, and most women aged 25 and older; but it was not highly significant for males aged 18–24 and 45–64, and it was not significant at all for males 25–44. (For the last three groups, however, the tendency to work is not expected to be much affected by economic circumstances.) Only in 1940 was the correlation distinctly significant

CHART 1

Correlation between Labor Force and Earnings, 38 Large Cities, United States, Census Dates, 1900–1950

Labor Force per 1,000 population aged 14 and older of same sex, standardized for age and sex on basis of population of Chicago in 1930.

Annual wage or salary in previous year, in dollars of 1929 purchasing power in Chicago, per adult-male equivalent factory worker; adjusted for intercity differences in cost of living except in 1899.



[a] Birmingham, Houston, Dallas, and Norfolk not covered by the 1900 census.

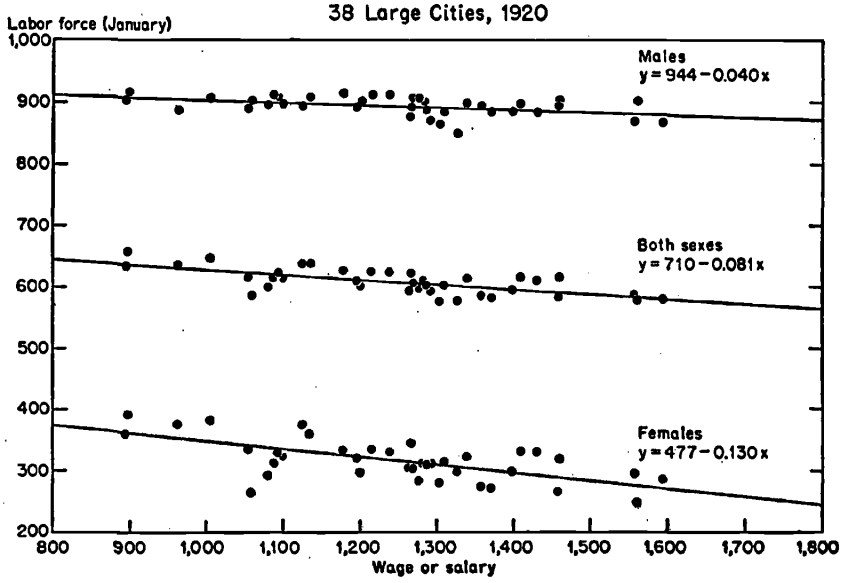
(chart continues on next page)

CHART 1, continued

Correlation between Labor Force and Earnings, 38 Large Cities, United States, Census Dates, 1900–1950

Labor Force per 1,000 population aged 14 and older of same sex, standardized for age and sex on basis of population of Chicago in 1930.

Annual wage or salary in previous year, in dollars of 1929 purchasing power in Chicago, per adult-male equivalent factory worker; adjusted for intercity differences in cost of living except in 1899.



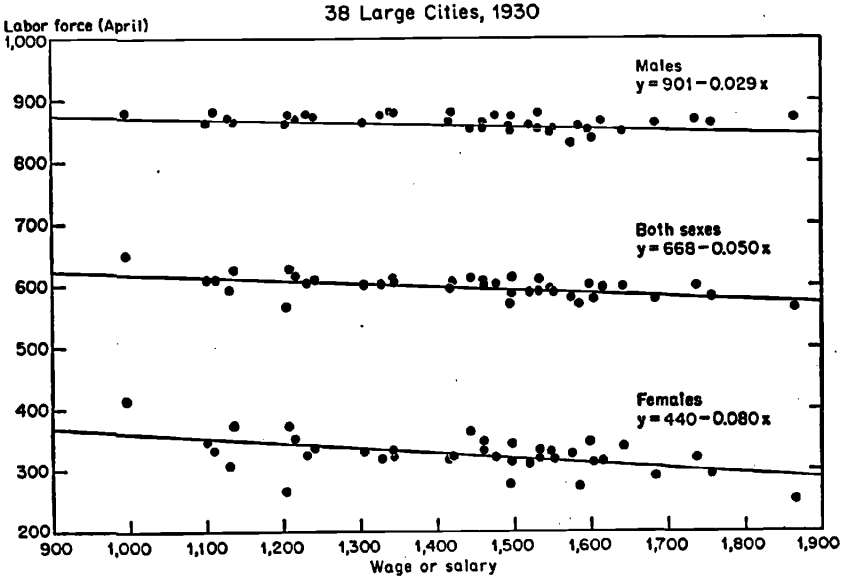


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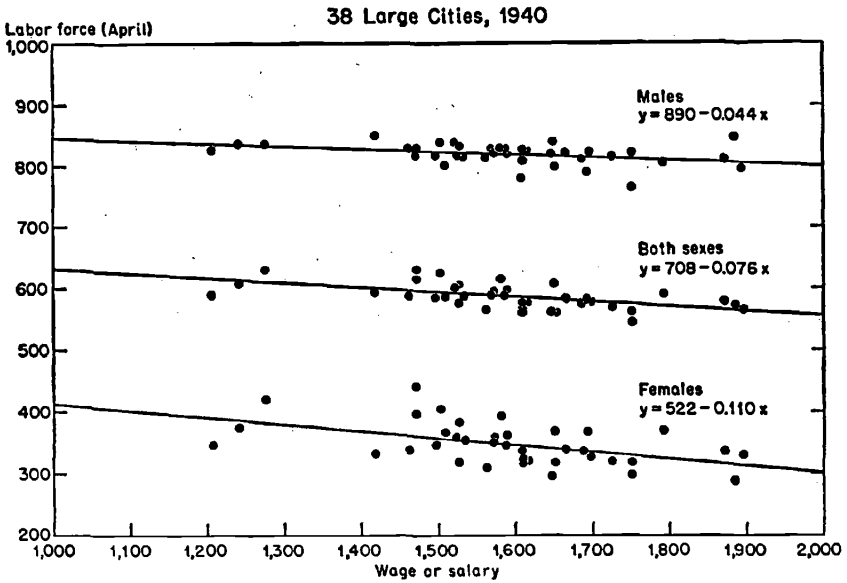
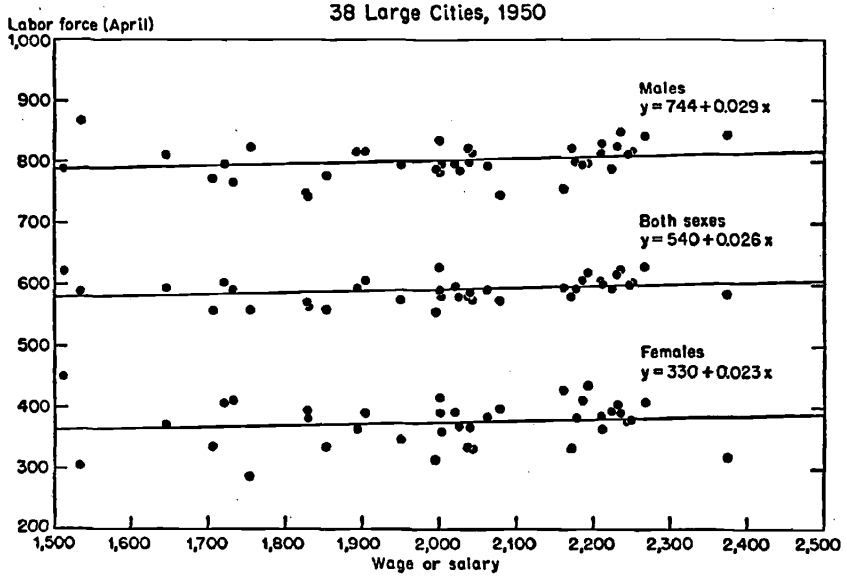
CHART 1, concluded





Source: Table 1 and Appendix Tables A-7A and D-1.

for males aged 18–24 and girls 16 and 17; in no year was it very significant for females 18–24.

4. During 1900–1940 the relationship was such that both sexes combined tended to have 8 fewer persons in the labor force, per 1,000 population aged 14 and older, for every additional $100 of earnings (Table 2).

Expressing the association between the labor force and earnings in numbers of people and in dollars makes comparison awkward. For example, a $100 gain in earnings has less significance when earnings are higher at the start, and an exodus from the labor force of 10 persons per 1,000 bulks larger when the labor force is around 500 per 1,000 population than when it is around 950 per 1,000. Accordingly, changes in the labor force and earnings are also presented in relative terms (Table 2, Part A, second line): the percentage by which the labor force of both sexes was lower in cities where real earnings per adult male equivalent were 1 per cent higher.[2]

5. The percentage differences accompanying a variation of 1 per cent in male earnings ranged from —0.13 in 1930 to —0.21 in 1940, and averaged —0.18 for the four decades—results very near to those of Douglas for 1920 and 1930.[3] Thus, during 1900–1940, wherever real earnings per adult male equivalent worker were up by 1 per cent, the labor force, standardized for age and sex, seemed to be down by roughly one-sixth of 1 per cent. The average for 1900–1950 was smaller: about one-eighth of 1 per cent. For females, the association was such that 1 per cent higher earnings of males were accompanied by 0.5 lower rate of participation on the average during 1900–1940 and 0.42 during 1900–1950. For males, the average depends on whether the

[2] This relative variation may be expressed in the following equation, where the labor force data are those for 1940 and the real earnings data are those for 1939. The 7.6 (fewer workers) is the original figure before it was rounded to 8 as presented in Table 2, Part A, first line.

$$\frac{\Delta l}{l} = \frac{\text{7.6 fewer workers (per 1,000 population 14 and older) associated with \$100 larger earnings}}{\text{585 workers (per 1,000 population 14 and older), average for 38 cities}} = -1.30 \text{ per cent;}$$

$$\frac{\Delta e}{e} = \frac{\text{\$100 larger real earnings (per adult-male equivalent)}}{\text{\$1,590 average real earnings (per adult-male equivalent) for 38 cities}} = 6.3 \text{ per cent.}$$

$$\frac{\Delta l}{l} \Big/ \frac{\Delta e}{e} = \frac{\Delta l \cdot e}{l \cdot \Delta e} = \frac{-1.30}{6.3} = -0.21 \text{ per cent.}$$

[3] Paul H. Douglas, *The Theory of Wages*, p. 288, and Erika H. Schoenberg and Paul H. Douglas, "Studies in the Supply Curve of Labor," *Journal of Political Economy*, February 1937, p. 70. These results were based on the population of Chicago, which was used as a standard; when Detroit was used in standardizing the labor force Douglas' results were —0.15 for 1920 and —0.13 for 1930.

TABLE 2

Variations in Labor Force Associated with Differences in Earnings, 38 Large Cities, United States, Census Dates, 1900–1950

(Number of persons by which rate of participation in labor force—per 1,000 persons aged 14 and older of same sex and age group—was reduced for every additional $100 of annual real earnings per adult-male equivalent employed in previous year, and percentage by which rate of participation was reduced for every 1 per cent addition to real earnings.)

	A. LABOR FORCE, BOTH SEXES						
	1900 [a] June	1920 Jan.	1930 Apr.	1940 Apr.	1950 Apr.	1900–1940 Average	1900–1950 Average
Reduction per $100 additional real earnings (persons)	−10	−8	−5	−8	+3	−8	−6
Reduction per 1 per cent additional real earnings (per cent)	−0.20	−0.17	−0.13	−0.21	+0.09	−0.18	−0.12

B. LABOR FORCE, SEX AND AGE GROUPS

	14 & Older	*14*	*15*	*16*	*17*	*18–19*	*20–24*	*25–44*	*45–64*	*65 & Older*
	Reduction per $100 Additional Real Earnings (persons)									
	MALES									
1900 (June) [a]	−18	...	...	...	...	...	...	n.s.	−3	−20
1920 (January)	−4	−26	−35	−17	−11	−8	−4	n.s.	−3	−14
1930 (April)	−3	−9	−21	−29	−21	−5	−2	n.s.	−1	−7
1940 (April)	−4	−3	−14	−34	−42	−27	−7	n.s.	n.s.	−13
1950 (April)	+3	+6	+5	n.s.	−8	n.s.	n.s.	+2	n.s.	+3
1900–1940 Average [b]	−7	−13	−23	−27	−25	−13	−4	0	−2	−14
1900–1950 Average [b]	−5	−8	−16	−20	−21	−10	−3	+0.4	−1	−10

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TABLE 2, *continued*

	14 & Older	14	15	16	17	18–19	20–24	25–44	45–64	65 & Older
					B. LABOR FORCE, SEX AND AGE GROUPS, *continued*					
					FEMALES					
1900 (June) [a]	−16	...	...	...	...	...	...	−17	−20	−13
1920 (January)	−4	−15	−22	n.s.	n.s.	+8	n.s.	−16	−17	−12
1930 (April)	−8	−4	−13	−15	n.s.	+14	n.s.	−12	−12	−5
1940 (April)	−11	−1	−5	−20	−20	n.s.	n.s.	−16	−12	−5
1950 (April)	n.s.	+4	+4	n.s.	n.s.	+9	n.s.	n.s.	n.s.	+2
1900–1940 Average [b]	−10	−7	−13	−12	−7	+7	0	−15	−15	−9
1900–1950 Average [b]	−8	−4	−9	−9	−5	+8	0	−12	−12	−7
					Reduction per 1 Per Cent Additional Real Earnings (per cent)					
					MALES					
1900 (June) [a]	−0.65	...	...	...	...	...	...	n.s.	−0.04	−0.39
1920 (January)	−0.06	−2.39	−1.31	−0.36	−0.17	−0.12	−0.05	n.s.	−0.03	−0.29
1930 (April)	−0.05	−3.51	−2.96	−1.51	−0.63	−0.10	−0.03	n.s.	−0.02	−0.18
1940 (April)	−0.09	−2.38	−4.69	−3.51	−2.10	−0.66	−0.12	n.s.	n.s.	−0.54
1950 (April)	+0.07	+1.39	+0.84	n.s.	−0.40	n.s.	n.s.	+0.03	n.s.	+0.13
1900–1940 Average [b]	−0.21	−2.76	−2.99	−1.79	−0.97	−0.29	−0.07	0	−0.02	−0.35
1900–1950 Average [b]	−0.16	−1.72	−2.03	−1.35	−0.83	−0.22	−0.05	+0.01	−0.02	−0.27
					FEMALES					
1900 (June) [a]	−0.74	...	...	...	...	...	...	−0.85	−1.55	−2.09
1920 (January)	−0.51	−2.56	−1.35	n.s.	n.s.	+0.16	n.s.	−0.65	−0.98	−1.73
1930 (April)	−0.35	−3.27	−2.66	−1.01	n.s.	+0.36	n.s.	−0.51	−0.73	−0.84
1940 (April)	−0.50	−2.57	−5.30	−2.71	−1.49	n.s.	n.s.	−0.65	−0.75	−1.05
1950 (April)	n.s.	+2.51	+1.58	n.s.	n.s.	+0.34	n.s.	n.s.	n.s.	+0.34
1900–1940 Average [b]	−0.53	−2.80	−3.10	−1.24	−0.50	+0.17	0	−0.67	−1.00	−1.43
1900–1950 Average [b]	−0.42	−1.47	−1.93	−0.93	−0.37	+0.22	0	−0.53	−0.80	−1.07

Source: See notes to Table 1.

n.s. = not significant.

[a] Birmingham, Houston, Dallas, and Norfolk were not covered by the census in 1900. The 38-city study omitted 1890 and 1910 because of the difficulty presented by the probability of varying degrees of overcount or undercount in these years in the different cities.

[b] In averages, n.s. is counted as zero.

extreme negative percentage in 1900 is included or excluded. On the whole it would seem best to exclude it, on the ground that the 1900 association was based on only 34 cities and did not benefit from an adjustment of earnings for intercity difference in living cost. If, in order to balance this exclusion, we also exclude the positive association for 1950—significant only on the lower level—the male labor force 14 and older tended to be smaller by 0.07 per cent when equivalent adult male earnings were higher by 1 per cent.

6. Among the individual age classes, each 1 per cent of higher real earnings per adult-male equivalent workers was accompanied during 1900–1940 by 0.17 to 5.3 per cent lower participation rates among boys and girls in their mid-teens, and by 0.18 to 2.09 per cent lower rates among the elderly.

The Possible Influence of Unemployment on the Relation between Labor Force Participation and Earnings

Douglas did not investigate the inverse relation between labor force participation and earnings as the possible result of intercity variations in the extent of unemployment. Under the additional worker theory, relatively high unemployment of men in a particular city could have forced many wives and young people into the labor market, bringing about a relatively high rate of labor force participation. High unemployment could also cause low labor earnings—so that the correlation between labor force and earnings would be a spurious one. But there is an alternative theoretical possibility. If the opposite of the additional worker theory were true—that is, if high unemployment discouraged many women, children, and older people, from seeking jobs —it is possible that labor force participation would be torn between being high as a result of low wages and low because of high unemployment.

These contingencies are investigated in Table 3 starting with 1930, because no satisfactory unemployment data were available for cities before that date. (In fact, these data were not gathered for the 1920 census and were not published in the 1910 census.) Table 3 begins with the same significant, inverse correlation between labor force of both sexes, of males, and of females and the real earnings of equivalent adult males that were given in Table 2. It next tests the correlation between labor force and unemployment. This it shows to have been generally inverse—like that between labor force and earnings; but also, to have been borderline or below in significance for all three groups at all three census dates. A third step is to test whether labor force has a significantly higher correlation with earnings and unemployment together, than with earnings alone. (Incidentally, the two "independent" variables, earnings and unemployment, are significantly correlated

TABLE 3

Simple, Multiple, and Partial Correlations: Labor Force Participation Rates by Sex, Real Earnings, and Unemployment of Males 14 and Older, 38 Large Cities, United States, Census Dates, 1930–1950

		1930			1940			1950		
		Both Sexes	*Males*	*Females*	*Both Sexes*	*Males*	*Females*	*Both Sexes*	*Males*	*Females*
Simple Correlations:										
Labor force and real earnings	r_{12}	−0.64 **	−0.48 **	−0.53 **	−0.59 **	−0.40 **	−0.50 **	+0.29 *	+0.22 *	+0.13
Labor force and unemployed	r_{13}	−0.33 **	+0.01	−0.38 **	−0.25 *	−0.02	−0.29 *	−0.26 *	−0.37 **	+0.02
Real earnings and unemployed	r_{23}		+0.49 **			+0.07			+0.03	
Multiple Correlations:										
Labor force, real earnings and unemployed	$R_{1.23}$	0.64 **	0.55 **	0.55 **	0.65 **	0.40 †	0.56 **	0.39 †	0.44 †	0.14
Partial Correlations:										
Labor force and real earnings holding unemployed constant	$r_{12.3}$	−0.58 **	−0.55 **	−0.43 **	−0.59 **	−0.40 **	−0.51 **	+0.31 *	+0.25 *	+0.13
Labor force and unemployed holding real earnings constant	$r_{13.2}$	−0.02	+0.32 *	−0.16	−0.26 *	+0.01	−0.30 *	−0.28 *	−0.39 **	+0.02

Source: See notes to Table 1.

* Significant on the 68 per cent ($\pm\sigma$) level.
** Significant on the 95 per cent ($\pm 2\sigma$) level.
† Significant on the 75 per cent level.

The variables are X_1, labor force per 1,000 persons 14 and older of same age-sex group, standardized for age-sex composition on the basis of the population of Chicago in 1930; X_2, real earnings per adult male equivalent in previous year adjusted for intercity differences; X_3, unemployed males 14 and older per 1,000 persons of same age-sex group.

only at the 1930 census and at that date the correlation is positive rather than inverse.) The results yield a multiple correlation $R_{1.23}$ only slightly higher than the simple correlation r_{12} for either 1930 or 1940, and appreciably higher in 1950 for both sexes and males but not for females.

Finally, the table examines whether the labor force is partially correlated with earnings, holding unemployment constant, and, if so, whether the correlation is stronger or weaker than that found when unemployment varied. The results show, on the whole, little difference. Holding unemployment constant weakened slightly the association between labor force and earnings in 1930, but left it almost the same in 1940 and 1950. There was no really significant association in any year between labor force and unemployment, holding earnings constant. Taking account of unemployment would not seem to have changed Douglas' results for 1930 or ours in 1940; but it might give some small additional explanation of labor force behavior in 1950.

The Possible Influence of Color and National Origin

Does the inverse relation between the labor force and income persist if the effects of color and of national origin are eliminated? In order to answer this question, Douglas constructed several partial correlations for 1920 and 1930, holding constant the share of Negroes, foreign-born, and native children of foreign-born in the population. His purpose was to learn whether the high labor force in cities where earnings were low was due to the presence of Negroes and foreign-born groups, whose high participation in the labor force may have been due to their color or national origin rather than to their poverty. His test did not modify his previous conclusion that the labor force of females was inversely related to income.[4]

This study proceeded with the same question in a very different way: in each city the *white* labor force was separately classified and expressed as a percentage of the white population. Data on the labor force by color were not available by age for 1900, but the procedure was carried out for each census from 1920 through 1950. Unfortunately, for 1920, 1930, and 1940 the labor force participation of whites could be correlated only with the earnings of all classes of males, rather than with the earnings of white males. Any distortion was kept to a minimum by confining the correlations to the 22 cities where the colored were a small proportion of the labor force—less than 10 per cent in 1940 (Table 4). The inverse association was upheld for both sexes 14 and older combined (standardized for age and sex),[5] for fe-

[4] Douglas, *op. cit.*, p. 293; Schoenberg and Douglas, *op. cit.*, pp. 72–73.

[5] The same general results were also obtained from correlations for 13 cities in which fewer than 5 per cent of the males in 1940 were *colored.*

males 14 and older standardized for age, for young females, and, to some extent, for elderly persons. The correlations for each of the years 1920, 1930, and 1940 also revealed a tendency for participation of the

TABLE 4

Correlation between Labor Force Participation of Whites and Real Median Earnings of Males of All Classes, 22 Large Cities with Relatively Few Colored to Distort the Median Earnings, United States, Census Dates, 1920–1940

(Coefficients of correlation between variations in rate of participation of white labor force—per 1,000 white persons aged 14 and older of same age-sex group—and intercity [a] differences in annual earnings of all classes in previous year per adult-male equivalent worker)

A. LABOR FORCE BY SEX [b]—REAL EARNINGS

	Both Sexes	*Males*	*Females*
1920 (January)	−0.37 *	−0.03	−0.39 *
1930 (April)	−0.45 **	−0.19	−0.38 *
1940 (April)	−0.47 **	−0.12	−0.46 **

B. LABOR FORCE BY AGE GROUP AND SEX—REAL EARNINGS

	14–19	*20–24*	*25–44*	*45–64*	*65 & Older*
			MALES		
1920 (January)	−0.13	−0.10	+0.09	−0.05	−0.43 **
1930 (April)	−0.39 *	+0.45 **	+0.19	−0.11	−0.54 **
1940 (April)	−0.16	−0.35 *	+0.08	+0.06	+0.08
			FEMALES		
1920 (January)	−0.51 **	−0.60 **	−0.23 *	−0.15	−0.02
1930 (April)	−0.42 **	−0.39 *	−0.16	−0.20	−0.33
1940 (April)	−0.52 **	−0.58 **	−0.26 *	+0.08	−0.30 *

Source: Appendix D. *Census of Population: 1920*, Vol. II, Chapter 3, Tables 15–17, and *Occupations*, Vol. IV, Chapter 4, Table 22; *1930*, Vol. III, Table 12, and *Occupations*, Vol. IV, Table 9; *1940*, Vol. III, *The Labor Force*, Parts 2–5, Table 5.

* Significant on the 68 per cent ($\pm\sigma$) level.
** Significant on the 95 per cent ($\pm 2\sigma$) level.

[a] Less than 10% of the population in the following cities in 1940 was colored: Boston, Bridgeport, Buffalo, Chicago, Cleveland, Denver, Detroit, Los Angeles, Milwaukee, Minneapolis, Newark, New Haven, New York, Omaha, Pittsburgh, Portland, Providence, Rochester, St. Paul, San Francisco, Scranton, and Seattle.

[b] Labor force standardized for age or age-sex group composition on the basis of the population of Chicago in 1930.

white labor force to be lower in cities where earnings of all classes of males were higher.

Results for the labor force of whites were generally lower than those found in Table 1 and many of them were not individually significant. Nevertheless when most members of a large family of correlations

have the same sign, the correlations must be accorded some respect, even if many of them are individually insignificant. Thus the results for white persons in Table 4 indicate that the inverse association between labor force participation and earnings found in the 38-city studies was not a spurious result of large concentrations of colored persons pulling down earnings and inflating labor force participation in some cities.

For 1950, the first census at which separate earnings became available for colored and white persons by cities, it was possible to correlate the labor force participation with male earnings for whites and for the colored independently (Table 5). It will be recalled that for all classes the inverse association between labor force and earnings disappeared

TABLE 5

Correlation between Labor Force and Real Median Male Earnings by Color, 38 Large Cities, United States, Census Date, 1950

(Coefficients of correlation between variations in rate of participation in labor force—per 1,000 persons aged 14 and older of same age-sex group—and intercity differences in annual earnings per adult-male equivalent employed in previous year)

	Both Sexes	*Males*	*Females*
A. LABOR FORCE BY SEX [a]—REAL EARNINGS			
White Labor Force and *White* Earnings 1950 (April)	+0.32 **	+0.31 *	+0.07
Colored Labor Force and *Colored* Earnings [b] 1950 (April)	−0.53 **	−0.26 *	−0.51 **

	14–19	*20–24*	*25–44*	*45–64*	*65 & Older*
B. LABOR FORCE BY SEX AND AGE GROUP—REAL EARNINGS					
MALES					
White Labor Force and *White* Earnings	+0.04	+0.35 **	+0.22 *	+0.41 **	+0.29 *
Colored Labor Force and *Colored* Earnings [b]	−0.70 **	−0.14	−0.12	−0.14	+0.28 *
FEMALES					
White Labor Force and *White* Earnings	−0.08	−0.15	+0.10	+0.12	+0.22 *
Colored Labor Force and *Colored* Earnings [b]	−0.42 **	−0.33 *	−0.48 **	−0.58 **	−0.43 **

Source: *Census of Population, 1950*, Vol. II, *Characteristics of the Population*, Part 1, Table 185, and Part 20, Tables 66 and 87. Appendix Table A-7A.

* Significant on the 68 per cent ($\pm\sigma$) level.
** Significant on the 95 per cent ($\pm 2\sigma$) level.

[a] Labor force standardized for age or age-sex composition on the basis of the population of Chicago in 1930.

[b] Data were available for 23 cities only: Atlanta, Baltimore, Birmingham, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Houston, Indianapolis, Kansas City, Los Angeles, Louisville, Memphis, Newark, New Orleans, New York, Norfolk, Philadelphia, Pittsburgh, Richmond, St. Louis, and San Francisco.

in 1950, and that the correlations, though individually insignificant, were positive. What do we find now? In the 23 cities with separate data, labor force participation and male earnings of the colored showed the same inverse correlation as that found for whites in 1920–1940 for both sexes combined, for males, and for females. They were inverse for all age-sex groups except males 65 and older. For males 14 and older they were significant only on the lower level and they were not significant at all in the 20–64 age groups. But the general pattern clearly suggests that the inverse tendencies between the labor force participation and earnings of the colored were still holding in 1950.

Not so, however, among whites in 1950, who showed generally positive correlations, not only for persons 14 and older, but for all the age-sex groups except females under 25. True, nearly all the correlations taken individually were either moderately significant or insignificant; but the fact that they were generally positive indicates the association between labor force participation and earnings to be no longer inverse for these groups of whites.

The previous section discussed additional tests made by this study to determine how unemployment affected the association between earnings and labor force participation of all classes. Such tests were made here for whites and colored separately in 1950 (Table 6). A significant inverse correlation on the higher level was found between the white male labor force and unemployed white males and, for the colored, between the labor force of the three groupings by sex and unemployed colored males—suggesting that adverse employment conditions may have had some effect in reducing the participation of these groups. For some groups, taking account of both earnings and unemployment measurably strengthened the correlation. Thus the multiple association of labor force, on the one hand, with earnings and unemployment, on the other, was significantly higher than that of labor force with earnings alone for white and colored males, and for whites of both sexes. But almost all the partial correlations were insignificant or borderline—not only those in which the labor force was associated with earnings, holding unemployment constant, but also those in which it was associated with unemployment, holding earnings constant. The labor force may have been associated with unemployment and earnings jointly, but it was associated only feebly, if at all, with either of these if the other was held constant.

The Effect of Child-Care Responsibilities on the Female Labor Force

We need to inquire here whether the lower labor force participation of wives in cities with higher male earnings may have been the con-

TABLE 6

Simple, Multiple, and Partial Correlations: Labor Force, Real Median Male Earnings, and Unemployed Males 14 and Older by Color, 38 Large Cities, United States, Census Date, 1950

		White			Colored [a]		
		Both Sexes	*Males*	*Females*	*Both Sexes*	*Males*	*Females*
Simple Correlations:							
Labor force [b] and real earnings	$r12$	+0.32 **	+0.31 *	+0.07	−0.53 **	−0.26 *	−0.51 **
Labor force [b] and unemployed	$r13$	−0.31 **	−0.47 **	+0.09	−0.55 **	−0.47 **	−0.44 **
Real earnings and unemployed	$r23$		−0.26 *			+0.66 **	
Multiple Correlations:							
Labor force,[b] real earnings and unemployed	$R1.23$	0.39 †	0.51 **	0.12	0.59 **	0.47 †	0.53 **
Partial Correlations:							
Labor force [b] and real earnings holding unemployed constant	$r12.3$	+0.26 *	+0.22 *	+0.10	−0.25 *	+0.07	−0.32 *
Labor force [b] and unemployed holding real earnings constant	$r13.2$	−0.24 *	−0.42 **	+0.11	−0.32 *	−0.40 *	−0.16

* Significant on the 68 per cent ($\pm\sigma$) level.
** Significant on the 95 per cent ($\pm 2\sigma$) level.
† Significant on the 75 per cent level.

[a] Data were available for 23 cities only: Atlanta, Baltimore, Birmingham, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Houston, Indianapolis, Kansas City, Los Angeles, Louisville, Memphis, Newark, New Orleans, New York, Norfolk, Philadelphia, Pittsburgh, Richmond, St. Louis, and San Francisco.

[b] Standardized for age or age-sex composition on the basis of the population of Chicago in 1930.

cealed effect of differences in the proportion of child-care responsibilities. It was not possible to separate the labor force tendencies of females with and without young children, but it was possible to correlate among cities the labor force tendencies of white females and the ratio of number of children under 6 to number of wives 15 and older. To minimize the possible influence of earnings, only those cities were chosen where median real earnings of males of all classes were roughly similar—between $1,500 and $1,700 annually—and where less than 10 per cent of the male labor force was colored. There were 16 such cities.

The presence of young children is not expected to explain the inverse association. On the contrary, greater child-care responsibilities should prevent poorer wives from entering the labor force and thus offset the effect of poverty. In any case, no intercity correlation was found in 1940 between the labor force of white females and the proportion of children under 6. If the effect was there, it was too weak to manifest itself—even among cities where male earnings were rather similar and the proportion of colored was small.

The Effect of Prevailing Length of Workweek on the Female Labor Force

One might expect the labor force participation of women to be greater where a shorter workweek would allow them enough spare time for housekeeping. There is no evidence, however, that this is the case. A correlation was made among 38 cities in 1940 between the proportion of the population of either sex in the labor force and the median hours worked by males (assuming this median would roughly represent the required workweek for women). Male, instead of female hours were used to avoid a spurious correlation if large numbers of females were working part time. The correlation does not suggest that long hours tend to prevent females from working; if anything, there was a bare suggestion to the contrary. This may be the effect of the tendency for low incomes to result in both longer hours and higher participation. However, standardizing for income by examining the labor force tendencies of white wives, aged 25 to 29, without children, whose husbands were within a narrow wage or salary range ($1,000–1,499), disclosed no association between the labor force and hours (in this case the hours of females were used). Wives 25–29 who had children and whose husbands were in the same income range, showed a tendency to enter the labor force in higher proportions where the workweek was shorter, but it was faint and probably insignificant.

This lack of association between female labor force participation and working hours at a moment of time is in contrast to the apparently dis-

tinct association found over time (Chapter 6). But the range of variation in hours among the cities at a given time was very narrow, whereas over time it was very wide. The moment-of-time data were hours actually worked and may have included differences in part-time employment among localities; the data over time are standard or full-time and do not include such influences. In any case the associations over time hold only among peacetime periods of moderately high employment.

Interdependence among Age-Sex Groups

The entrance of women into gainful employment could conceivably displace many children and elderly people: either "pushing" them out through competition, or "pulling" them out when women's earnings enable young people to stay in school longer, or older people to retire earlier. This possibility was explored for 1930 by comparing the labor force participation of women aged 20–64 with that of youths 14–19 and persons 65 and older. To guard against the chance of income being the real influence, the comparison was confined to 27 cities where the yearly earnings of male factory workers were within a fairly narrow range—$900–1,550. The correlation was negligible. A further narrowing of the income range to $1,175–1,550 increased the correlation to bare significance, but it was necessary to exclude Pittsburgh in order to achieve even this. Thus women were not more apt to be in the labor force in areas where children and elderly people were less apt to be in gainful work—at least not at a given time. We shall see, however, that the relation over time is quite different.

Earnings of Females

So far this study has concentrated on male earnings; a word is called for on the response to variations in female earnings. A pairing of the wages or salaries of females employed for twelve months in 1939 with the participation rates of single women and of wives not supported by husbands reveals no significant association among cities of 100,000 to a million, among all urban areas, or among rural nonfarm areas. Higher female earnings either did not attract more women into the labor force, or were offset by some other factor, possibly the contrary influence of male earnings.

Labor Force and Earnings among the 48 States

The 1940 and 1950 censuses report the labor force and wages and salaries separately for rural and for urban areas of each state. In 1940, the urban areas of the 48 states showed about the same correlation between income and the labor force as did the 38 cities; but the rural

nonfarm areas and the states taken as units (standardized for age-sex and rural-urban composition) exhibited no association of any kind between income and the labor force in 1940 or in 1950. The association may not have existed among smaller cities, towns, and rural areas, or it may have been obliterated by other factors not present in large cities. In 1950, the urban areas of the 48 states revealed an inverse association only for females, and only half as pronounced as in 1940. The association for males was positive in 1950 but only moderately significant.

Association between Labor Force and Income: 12 to 16 Nations at a Given Time

Do lower-income nations tend to have higher labor force participation? This possibility was investigated among 16 nations using data for around 1930 and among 12 nations using data for around 1950. The nations are listed as follows, showing the years of labor force enumerations, with the first nine countries common to both lists.

Investigated for around 1930	Investigated for around 1950
Australia (1933)	Australia (1947)
Belgium (1930)	Belgium (1947)
Canada (1931)	Canada (1951)
Germany, excluding the Saar (1933)	Germany (Western) (1950)
Italy (1936)	Italy (1950)
Great Britain (1931)	United Kingdom (1951)
Netherlands (1930)	Netherlands (1947)
Sweden (1930)	Sweden (1950)
United States (1930)	*United States (1950)*
Czechoslovakia (1930)	Austria (1951)
Denmark (1930)	Finland (1950)
Estonia (1934)	Philippines (1948)
France (1930)	
Japan (1930)	
Norway (1930)	
Switzerland (1930)	

The nations were selected on the basis of available data. Labor force data for the 16 nations were accessible in a compilation of participation rates by broad age-sex groups published by the *International Labour Review* (Geneva, International Labour Office). The years referred to depended on when the census of each country was taken—the ma-

jority being 1930. In two nations the date was 1931, in two others, 1933, in one, 1934; and in Italy the census was taken as late as 1936. For all 16 nations, data on average annual national income per member of the labor force during 1925–1934, translated into United States dollars of 1925–1934 purchasing power, were available from Colin Clark's *Conditions of Economic Progress* (London, Macmillan, 1940).

The problems of comparing data of different countries are most perplexing. Censuses are not all taken at the same time or under the same economic conditions; they are planned and administered independently; and they do not always include the same types of worker. The United States excludes farm wives and daughters who do housework or churn butter solely for family consumption; Germany and the countries of Eastern Europe usually count them in. Moreover, something more than mere definition is involved in these differences, since farm women doubtless do far more field and commercial dairy work in these lands than in the United States. The foreign censuses have published little on definitions, less on instructions to enumerators, and still less on actual practices; in the extent and intensity of its pre-enumerative and post-enumerative studies the United States census is, so far as could be determined by this study, unique. Some of the uncertainties, however, involve minor segments of the population and they are not so troublesome as those encountered in other important economic magnitudes, including those of national income (Appendix F).

Income data, it should be noted, are not adjusted for income taxes, social security, or other deductions. They are not comparable therefore with the personal disposable income data which are used later for the studies of five nations over time. They are subject to formidable difficulties of comparisons in real buying power among nations with very different production and consumption patterns, and to problems presented by currency and exchange restrictions of various countries in translating their moneys into United States dollar equivalents.

Subject to such qualifications, there was for the 16 nations a significant inverse association between the over-all labor force participation rate of persons 15 and older, standardized for age and sex, and the real annual national income per labor force member, expressed in equivalent United States dollars of 1925–1934 buying power (Table 7 and Chart 2). The labor force was smaller by 11 persons (per 1,000 population 15 and older) for each $100 higher real income per worker, and by 0.12 per cent for each 1 per cent higher income. The labor force participation of females 15 and older and real income per worker were similarly associated, with 21 fewer females in the labor force per 1,000 females 15 and older for each $100 higher real income per worker, and

TABLE 7

Correlation between Labor Force and Income, 16 Countries around 1930 and 12 Countries around 1950

(Variations in rate of participation in labor force [a]—per 1,000 persons aged 15 and older of same age-sex group—correlated with income per labor force member in U.S. dollars) [b]

	Coefficients of Correlation		*Fewer Persons in Labor Force per $100 Additional Income*		*Per Cent Smaller Labor Force per 1 Per Cent Additional Income*	
	Around:		*Around:*		*Around:*	
	1930	*1950*	*1930*	*1950*	*1930*	*1950*
Both sexes	−0.68 **	−0.54 *	−11	−3	−0.12	−0.07
Males	−0.20	−0.11	n.s.	n.s.	n.s.	n.s.
15–19	−0.52 **	−0.35 *	−16	−6	−0.14	−0.11
20–64	+0.38 *	−0.18	+1	n.s.	+0.001	n.s.
65 & older	−0.12	−0.19	n.s.	n.s.	n.s.	n.s.
Females	−0.65 **	−0.54 *	−21	−6	−0.40	−0.23
15–19	−0.50 **	−0.31	−22	n.s.	−0.27	n.s.
20–64	−0.62 **	−0.52 *	−22	−7	−0.42	−0.25
65 & older	−0.59 **	−0.53 *	−11	−4	−0.57	−0.54

Source (1930) : *Income data:* Colin Clark, *The Conditions of Economic Progress*, London, Macmillan, 1940, pp. 34–40; *labor force data: Year Book of Labour Statistics, 1939*, Table 1, and *International Labour Review*, May 1940, pp. 546–549, Geneva, International Labour Office.

(1950) : *Income data: National and Per Capita Income, Seventy Countries—1949*, Table 1, Statistical Papers Series E. No. 1, United Nations. *Labor Force data: Year Book of Labour Statistics, 1954*, Tables 1 and 2.

n.s. = not significant.

* Significant on the 68 per cent ($\pm\sigma$) level.
** Significant on the 95 per cent ($\pm 2\sigma$) level.

[a] Standardized for age, or age and sex, on basis of population of United States in 1950.

[b] Income data for around 1930 are averages for 1925–1934; income data for around 1950 are for 1949.

The 16 countries: Germany, Australia, Belgium, Canada, Denmark, Estonia, United States, France, Great Britain, Italy, Japan, Norway, Netherlands, Sweden, Switzerland, and Czechoslovakia.

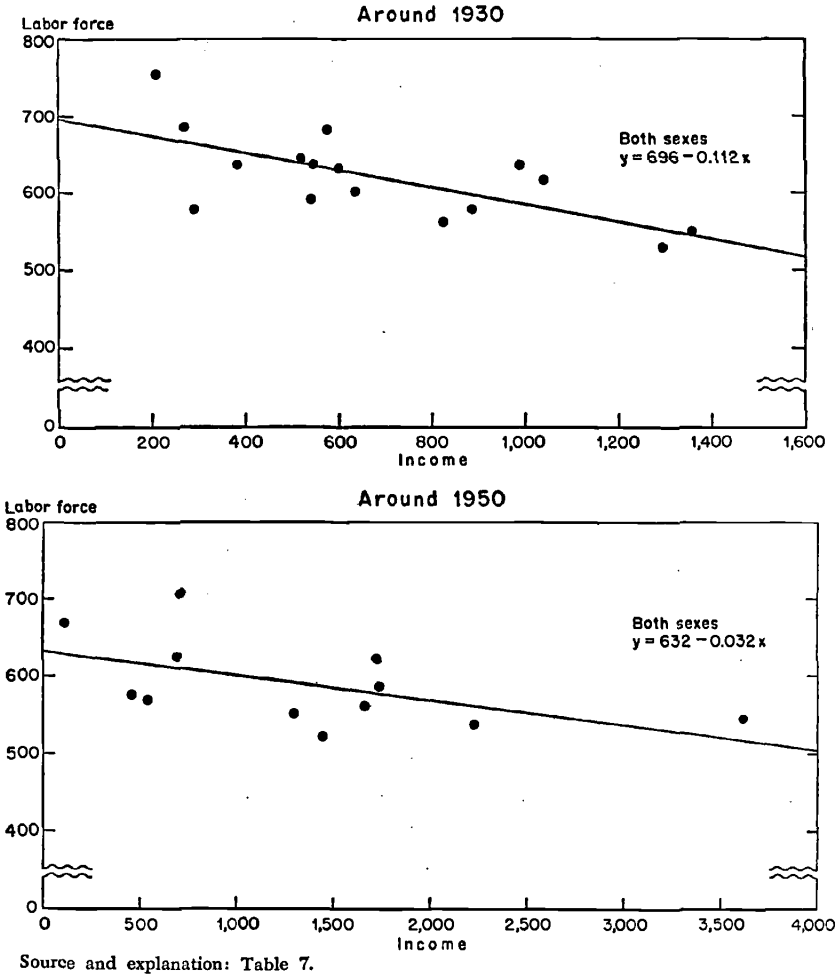
The 12 countries: Australia, Austria, Belgium, Canada, Finland, Germany, Italy, Netherlands, Philippines, Sweden, United Kingdom, and United States.

0.40 per cent fewer for each 1 per cent higher income. In the case of both sexes and females 15 and older, these percentage associations between income and labor force participation were similar to those among 38 United States cities. (Table 2.) There was no significant association in the case of males 15 and older or of males 65 and older and only a mildly significant association for men 20–64. However, all of the age-sex groups, except men 20–64, had associations with the same (negative) sign.

CHART 2

Correlation between Labor Force and Income per Labor Force Member: 16 Countries around 1930 and 12 Countries around 1950

Labor force 15 and older per 1,000 persons of same age group.
Income per labor force member in U.S. dollars.



Source and explanation: Table 7.

No data were available for an analogous study of this many nations at any date before 1930, or for any date around 1940; the only other study that could be made among a substantial number of nations was for around 1950.

Selection of the 12 nations was determined primarily by the availability of income data of a certain quality. The United Nations Sta-

tistical Office computed the per capita income of 70 nations for 1949, translated into United States dollars. But data for only about twenty-four of the seventy were of "A" quality, based on official or semi-official estimates—and in only 12 of these had a labor force census been taken around 1950. In the 12 nations, three of the censuses were taken in 1951, five in 1950, one in 1948, and three in 1947.

Of all the age-sex groups analyzed, none had a significant association with income on the higher level; only both sexes combined, females, and teen-age males had even moderately significant associations. However the associations among the 12 nations were too similar in sign to be dismissed altogether. Almost identical inverse results were obtained when labor force participation was correlated with income *per capita.*

So far only a simple relationship with income has been considered. For some groups, labor force participation might also be influenced by other factors. Lacking data, it was not feasible to investigate most of these, but two of the most obvious were examined: child-care responsibilities and social security benefits.

The first was investigated by testing for a simple correlation between the labor force of women 20–64 and the ratio of females 15 and older to children 0–14—the higher the ratio, the lighter these responsibilities. The 1930 study gives no support to the rather popular notion that women in high per capita income countries would have relatively fewer children to care for; these two variables seem to have been independent.

But the study did show that female labor force participation was associated with lightness of child cares in the way expected, i.e. the fewer young children the average woman has, the higher the labor force participation becomes for women 20–64. The multiple correlation ($R_{1.23}$) with income and lightness of child cares was somewhat higher than the simple one with income alone. The partial correlations differed: the correlation of labor force with income, holding child cares constant, or with child cares, holding income constant, was slightly lower than the association of labor force with either singly. All in all, the burden of child cares adds only a little to the explanation of labor force-income behavior in 1930 and nothing at all in 1950.

The influence of relative availability of old age social security benefits was examined by correlating labor force participation of men 65 and older with the percentage of the population 65 and older of both sexes receiving old age benefits. This study could be made only for around 1950.[6] No account was taken of the amounts of such benefits in relation to the incomes elderly men could have earned, or of such

[6] Tables 6 and 7; *Year Book of Labour Statistics, 1954,* Geneva, International

conditions as restrictions on earnings while drawing benefits. Elderly persons receiving railroad retirement benefits and old age assistance (charity) were included in these figures in the United States, but no attempt was made to discover analogous supplementary benefits for the aged in the other countries. Excluded also were recipients of pensions under private plans. The study was confined to 11 countries, since old age benefit data for the Philippines were not available.

Despite the crudeness of data, there did seem to be some moderate correlation between labor force participation of older persons of a nation and the per cent of its older persons drawing old age benefits —either because the benefits enable men to retire or because men who retire are apt to try to qualify for them. A multiple correlation with income and per cent drawing old age benefits was substantially higher than the correlation with income alone, but it was significant only on the 75 per cent level. The partial correlation with income, holding the benefit factor constant, is not appreciably higher than the simple correlation with income alone. Whether or not social security benefits are taken into account, there is still no significant association between labor force participation of the elderly and the level of real income per labor force member among nations.

Association between Labor Force and Income among 3 to 5 Nations at a Given Time

A number of later chapters are devoted to a detailed examination of five nations *over time;* here they are examined at *a given time.* The study is at a disadvantage in correlating so few countries. But it has four advantages of selectivity. First, the labor force and income basic statistics are probably more sound (Appendixes D and E). Second, the same nations can be studied at various points in time. Third, the income data are adjusted to a personal-disposable basis, whereas those for the 12 and 16 nations did not allow for deductions from workers' pay (see Appendix D). Fourth, the income data are expressed as income per equivalent adult-male employed worker, while in the study of the 12 and 16 nations these data were expressed as income per member of the labor force. Using the employed-worker basis prevents distortion of correlations due to unemployed persons in the labor force. The adjustment to an equivalent adult-male basis is made because large numbers of women and children in the labor force could lower a nation's average income, not as the effect of poorly rewarded labor, but because women and children earn lower wages than men and often work only part of the year. A low average income could thus be the

Labour Office, Tables 2, 3, 4, and 32; *Statistical Abstract of the United States, 1954,* Bureau of the Census, p. 253.

statistical result, rather than the economic cause of high labor force participation among women and children. The adjustment tends to correct this spurious correlation, though it can be made only imperfectly from fragmentary data on earnings of women and child workers in relation to the earnings of males, principally in manufacturing (Appendix D).

Not all five countries could be studied in all the years covered by the United States census, but it was possible to make three-nation comparisons for around 1900 and 1920 and five-nation comparisons for around 1930, 1940, and 1950 (Chart 3). Graphically, at least, all seem to reveal the inverse association noted for the larger number of countries around 1930 and 1950, which association seems to be specially pronounced for both sexes and for females, and reasonably definite for males, except possibly around 1900. Since five nations were represented for each of the census dates around 1930, 1940, and 1950 it was possible to test the association by correlation (Table 8). These correlations had to be numerically high to be significant because of the small num-

TABLE 8

Correlation between Labor Force and Income, 5 Countries around 1930, 1940, and 1950

(Variations in rate of participation in labor force [a]—per 1,000 persons 14 and older of same age or age-sex group—correlated with personal disposable national income per adult-male equivalent employed, in 1929 U.S. dollars.)

	Coefficients of Correlation			*Fewer Persons in Labor Force per $100 Additional Income*			*Per Cent Smaller Labor Force per 1 Per Cent Additional Income*		
	Around:			*Around:*			*Around:*		
	1930	*1940*	*1950*	*1930*	*1940*	*1950*	*1930*	*1940*	*1950*
Both sexes									
14 & older	−0.81 *	−0.90 **	−0.86 *	−10	−11	−5	−0.23	−0.29	−0.17
Males									
14 & older	−0.52 *	−0.81 *	−0.66 *	−3	−6	−3	−0.05	−0.11	−0.07
Females									
14 & older	−0.79 *	−0.80 *	−0.84 *	−17	−16	−8	−0.79	−0.79	−0.50

Source and explanation of data: Appendixes A and D; notes to Chart 3.

* Significant on the 68 per cent ($\pm\sigma$) level.
** Significant on the 95 per cent ($\pm 2\sigma$) level.

[a] Standardized for age or age-sex composition on the basis of the population of the United States in 1940.

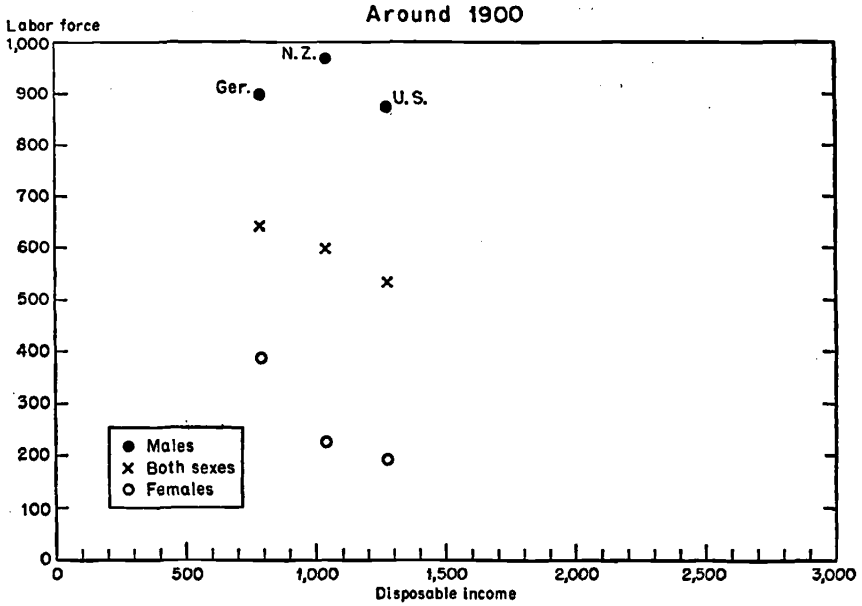
The 5 countries: United States, Great Britain, Canada, New Zealand, Germany.

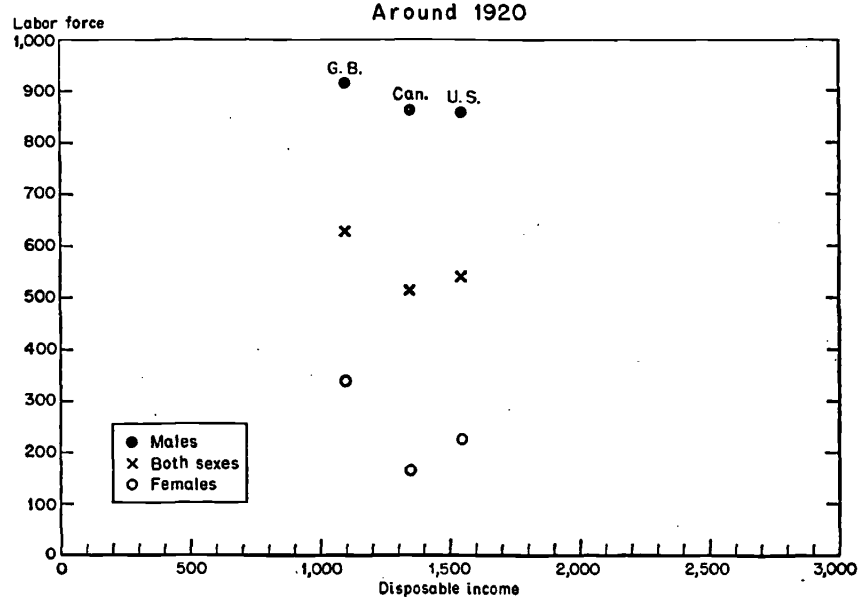
CHART 3

Correlation between Labor Force and Disposable Income, 3 to 5 Countries, Census Dates, 1900–1950

Labor force 14 and older by sex per 1,000 population of same sex and age group, standardized for age and sex on basis of United States population in 1940.

Personal disposable national income per adult-male equivalent employed, in 1929 U.S. dollars.





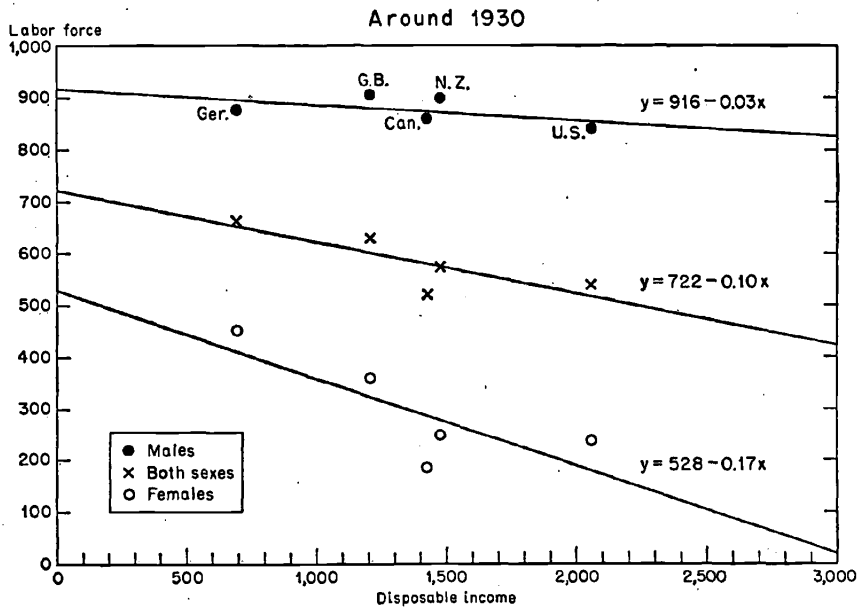
(chart continues on next page)

CHART 3, continued

Correlation between Labor Force and Disposable Income, 3 to 5 Countries, Census Dates, 1900–1950

Labor force 14 and older by sex per 1,000 population of same sex and age group, standardized for age and sex on basis of United States population in 1940.

Personal disposable national income per adult-male equivalent employed in 1929 U.S. dollars.



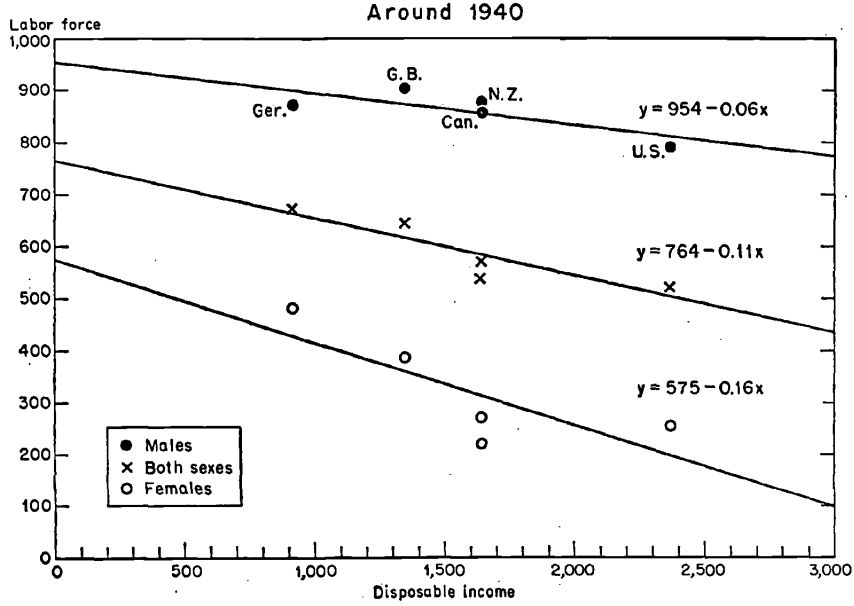
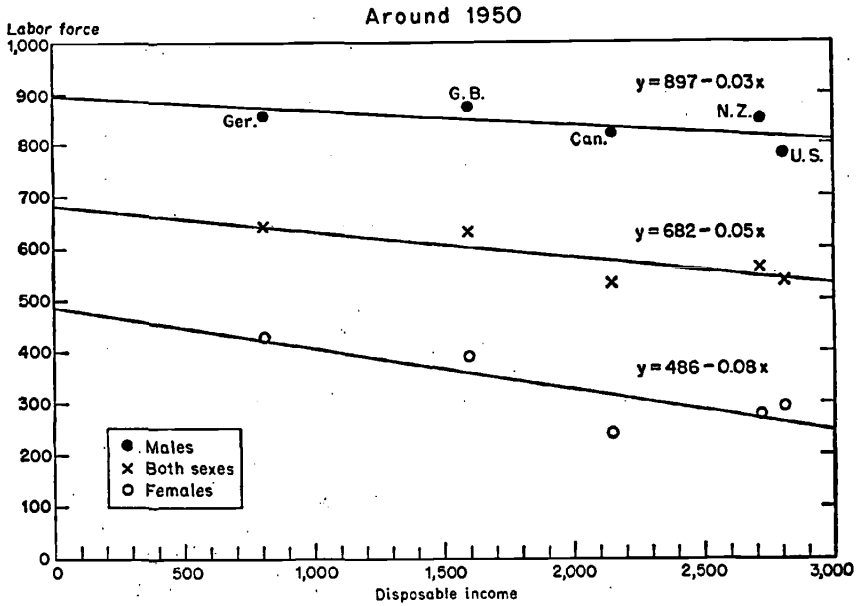


CHART 3, concluded



Source and explanation: Appendixes A and D. Data on labor force and income refer to the nations and census years listed below (1910 being omitted for lack of comparable data). The income figure, when based on data of noncensus years, was adjusted to refer to the census year (Appendix D).

Around:	United States	Great Britain	Canada	New Zealand	Germany
1900	1900	...	...	1901	Av. 1895 & 1907
1920	1920	1921	1921	...	...
1930	1930	1931	1931	Av. 1926 & 1936	Av. 1925 & 1933
1940	1940	1939	1941	Av. 1936 & 1945	1939
1950	1950	1951	1951	1951	1950

ber of degrees of freedom; but all of them were at least moderately significant and one of them—both sexes around 1940—was significant on a 95 per cent level. All the associations were inverse. And for a particular sex group they were numerically very similar at each of the three censuses, especially in the case of females and both sexes.

It is difficult not to be impressed with the associations between labor force and income among these nations at a given time. No case is remarkable in itself, but like the associations among the cities, and to a considerable extent, states of the United States, the accumulating evidence of inverse association between labor force and income is not easily dismissed.