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Volume Author/Editor: Paul J. Taubman, Terence Wales

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Chapter Author: Paul J. Taubman, Terence Wales

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INCOME DIFFERENTIALS TO EDUCATION IN 1968

Appendix H: Data on Earnings in 1968 and 1958

Before examining the results for 1968, it is necessary to point out differences between the 1968 and 1969 data. As explained earlier, the 1969 questionnaire asked for salary only on the primary job if a person had two or more positions; in the same questionnaire, total earnings for 1968 were requested. While the effect on average earnings was shown to be small, this difference in itself would make 1968 a better income concept for our purposes. There are, however, two offsetting considerations. First, since the questionnaires were mailed late in 1969, there could be some response error because of the passage of one year.¹ Second, in 1968 about 200 fewer people than in 1969 answered the earnings question.²

Since the results for 1968 are fairly similar to those for 1969, we present only the important equations and make brief comments. From equations 12 and 13 in Table H-1, we observe that, as in 1969, all interactions of graduate education with the first ability factor are positive, but that only the Q_4 coefficient is significant. In equation 11 we find the same general pattern of results as we did in 1969 except that the middle fifth in ability, the second and third fifths in biography, and "father attended college" are no longer significant at the 5 percent level (although they are almost significant). Health and marital status as measured in 1969 are quite important, but it should be expected that the 1968 measurements on these variables would be very highly correlated with the 1969 measurements.

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<input type="checkbox"/> -2	\$ 31-35
<input type="checkbox"/> -2	\$ 37-41
<input type="checkbox"/> -2	\$ 43-47

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¹For one study dealing with the size and randomness of response error in a one-year recall of income, see Summers (1956).

²Also, we have used the education as recorded in 1969. There may be a few instances in which people finished their education in 1969, but we doubt that this is a serious problem.

TABLE H-1 Regressions for salary, 1958 and 1968: 1969 respondents (in dollars per month)

	Constant	Some college	Under-graduate degree	Some graduate work	Master's	Ph.D. and LL.B.	Doctor	Teacher	Age	Q ₂
(1) Y ₅₈	\$ 676.1 (43.3)	\$100.6 (4.7)	\$ 97.1 (4.8)	117.1 (3.2)	\$ 10.1 (0.3)	\$302.7 (8.8)				
(2) Y ₅₈	493.5 (4.4)	101.6 (4.7)	102.4 (4.9)	121.3 (3.3)	13.2 (0.4)	307.6 (8.9)			\$5.0 (1.6)	
(3) Y ₅₈	477.7 (4.3)	102.4 (4.8)	108.8 (5.3)	141.1 (3.9)	84.3 (2.5)	221.7 (6.0)	\$403.2 (6.2)	\$-209.8 (5.5)	5.5 (1.8)	
(4) Y ₅₈	518.1 (4.6)	64.6 (3.0)	48.2 (2.3)	84.7 (2.3)	24.3 (0.7)	157.8 (4.2)	399.9 (6.3)	-183.6 (4.9)	5.5 (1.8)	\$10.7 (0.4)
(5) Y ₅₈	519.4 (4.6)	65.4 (3.1)	50.1 (2.3)	62.4 (1.5)	1.8 (0.0)	132.2 (3.0)	399.4 (6.3)	-182.6 (4.9)	5.5 (1.8)	11.3 (0.5)
(6) Y ₅₈	526.8 (4.6)	65.3 (3.1)	50.5 (2.4)	2.9 (0.9)	-55.9 (0.9)	72.2 (1.1)	399.5 (6.3)	-184.0 (4.9)	5.4 (1.8)	-0.9 (0.0)
(7) Y ₅₈	532.3 (4.7)	67.0 (3.1)	59.2 (2.8)	97.3 (2.7)	37.1 (1.1)	174.5 (4.7)	396.6 (6.2)	-190.0 (5.1)	5.5 (1.8)	
(8) Y ₆₈	1,162.0 (34.2)	248.4 (5.3)	425.3 (9.4)	348.4 (4.6)	283.7 (4.6)	825.5 (12.3)				
(9) Y ₆₈	1,412.4 (4.6)	246.9 (5.3)	420.0 (9.2)	343.6 (4.5)	280.4 (4.5)	820.3 (12.2)			-5.4 (0.8)	
(10) Y ₆₈	1,366.1 (4.4)	250.1 (5.4)	425.1 (9.4)	393.7 (5.2)	503.4 (7.2)	767.5 (10.8)	462.7 (3.4)	-571.4 (6.8)	-4.4 (0.7)	
(11) Y ₆₈	1,438.9 (4.7)	157.8 (3.4)	272.8 (5.8)	245.6 (3.2)	328.5 (4.6)	599.4 (8.3)	460.9 (3.4)	-506.0 (6.1)	-3.5 (0.5)	66.1 (1.2)
(12) Y ₆₈	1,442.7 (4.7)	160.5 (3.4)	279.4 (5.9)	188.5 (2.3)	259.5 (3.2)	529.5 (6.4)	456.3 (3.4)	-494.2 (5.9)	-3.5 (0.5)	68.1 (1.3)
(13) Y ₆₈	1,458.0 (4.7)	161.2 (3.5)	281.3 (5.9)	96.7 (0.8)	169.8 (1.4)	436.3 (3.5)	453.8 (3.4)	-496.5 (5.9)	-3.6 (0.6)	50.1 (0.9)
(14) Y ₆₈	1,522.1 (5.0)	170.9 (3.7)	320.4 (6.9)	292.4 (5.9)	388.8 (5.5)	661.1 (9.3)	454.3 (3.4)	-534.3 (6.4)	-3.5 (0.5)	

NOTE: Figures in parentheses are *t* statistics.

TABLE H-1 (continued)

	Health	Single	Father attended high school	Father attended college	Biography				Ability factor	$\bar{R}^2/S.E.$
					Q ₂	Q ₃	Q ₄	Q ₅		
(1) Y _{5H}										.026
										434
(2) Y _{5H}										.027
										434
(3) Y _{5H}										.047
										429
(4) Y _{5H}	\$ -65.5	\$ -133.5	\$ 64.0	\$62.2	\$ -2.3	\$24.3	\$ 67.5	\$100.0	Factor 1	.079
	(5.2)	(2.6)	(3.8)	(3.0)	(0.1)	(1.0)	(2.8)	(4.2)		423
(5) Y _{5H}	-65.2	-134.9	63.6	61.7	-2.1	23.8	67.6	100.0	Factor 1	.079
	(5.2)	(2.6)	(3.8)	(3.0)	(0.1)	(1.0)	(2.8)	(4.2)		423
(6) Y _{5H}	-65.3	-132.9	63.6	61.8	-1.5	24.7	68.3	100.2	Factor 1	.080
	(5.2)	(2.6)	(3.8)	(3.0)	(0.1)	(1.0)	(2.9)	(4.2)		423
(7) Y _{5H}	-66.8	-130.2	66.1	68.1	-0.6	26.8	70.6	107.4		.075
	(5.3)	(2.5)	(3.9)	(3.3)	(0.0)	(1.1)	(3.0)	(4.6)		423
(8) Y _{6H}										.049
										959
(9) Y _{6H}										.049
										959
(10) Y _{6H}										.064
										952
(11) Y _{6H}	-203.9	-282.1	115.8	80.6	97.3	79.7	167.4	198.3	Factor 1	.102
	(7.5)	(2.5)	(3.2)	(1.8)	(1.9)	(1.5)	(3.3)	(3.9)		934
(12) Y _{6H}	-202.7	-287.8	115.2	79.4	97.8	80.3	168.1	198.3	Factor 1	.103
	(7.5)	(2.5)	(3.2)	(1.8)	(1.9)	(1.6)	(3.3)	(3.9)		934
(13) Y _{6H}	-202.4	-286.5	115.4	80.5	98.7	81.5	168.9	197.0	Factor 1	.103
	(7.5)	(2.5)	(3.2)	(1.8)	(1.9)	(1.6)	(3.3)	(3.9)		934
(14) Y _{6H}	-208.8	-266.6	123.9	99.1	102.9	87.9	176.8	226.9		.094
	(7.7)	(2.3)	(3.4)	(2.2)	(2.0)	(1.7)	(3.4)	(4.4)		938

Biography			Ability factor	$\bar{R}^2/S.E.$
Q ₃	Q ₄	Q ₅		
				.026
				434
				.027
				434
				.047
				429
\$24.3	\$ 67.5	\$100.0	Factor 1	.079
(1.0)	(2.8)	(4.2)		423
23.8	67.6	100.0	Factor 1	.079
(1.0)	(2.8)	(4.2)		423
24.7	68.3	100.2	Factor 1	.080
(1.0)	(2.9)	(4.2)		423
26.8	70.6	107.4		.075
(1.1)	(3.0)	(4.6)		423
				.049
				959
				.049
				959
				.064
				952
79.7	167.4	198.3	Factor 1	.102
(1.5)	(3.3)	(3.9)		934
80.3	168.1	198.3	Factor 1	.103
(1.6)	(3.3)	(3.9)		934
81.5	168.9	197.0	Factor 1	.103
(1.6)	(3.3)	(3.9)		934
87.9	176.8	226.9		.094
(1.7)	(3.4)	(4.4)		938

The returns to education given in Table H-2 are about 15 percent lower than those for 1969 (Table 5-8, page 100); for example, some college is 14 rather than 17 percent and Ph.D. is 52 rather than 61 percent. There is no reason not to expect either the memory lapse or the small increase in nonresponses to affect income at all education levels proportionately. Thus, it might be suspected that the 1969 restriction to primary earnings affected our estimate of the return to education. We doubt that this is the explanation, since (as explained above) when we calculated the income differentials due to education in 1968 and 1969 from

TABLE H-2
Percentage
increase in
1958 and 1968
earnings, by
education level

	Percentage by which earnings in each education level exceed:	
	Earnings of average high school graduate	Earnings of average member of preceding education level
1958		
Some college	10	10
Undergraduate degree	7	-2
Some graduate work	13	5
Master's	4	-8
Ph.D. and LL.B.	23	19
M.D.	85	
Undergraduate degree (teacher)	-20	
Master's (teacher)	-24	
1968		
Some college	14	14
Undergraduate degree	23	9
Some graduate work	21	-2
Master's	28	6
Ph.D. and LL.B.	52	18
M.D.	91	
Undergraduate degree (teacher)	-20	
Master's (teacher)	-15	

SOURCES: 1958: Incomes of average person in each education class from equation 3, Table H-1; absolute increases from equation 4, Table H-1. Average age, 36. 1968: Incomes of average person in each education class from equation 10, Table H-1; absolute increases from equation 11, Table H-1. Average age, 46.

RETURNS TO EDUCATION IN 1958

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H-2 are about 15 per-
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 We doubt that this is
 e) when we calculated
 in 1968 and 1969 from

mean incomes of those with only one job in 1969, the returns were about 1½ percent higher.³ Thus, either because of general economic conditions or because of an age-income profile that is declining more rapidly, high school graduates in this sample did relatively worse in 1969 than in 1968.

The effect of ability is about the same as in 1969. Thus, the coefficient on Q_5 of \$278 is as great as that on the undergraduate-degree variable. When ability is omitted, the biases (although not recorded) are very slightly above the corresponding biases in Table 5-9, (page 103). Thus, the average lower-bound bias is 11 percent compared with 10 percent in 1969.

which earnings in each
 exceed:

**RETURNS TO
 EDUCATION IN
 1958**

For most of the respondents, information was collected in 1969 on 1958 income. The analysis of these data is beset by two problems. First, it is reasonable to expect that the measurement error of income is greater here than in the other years because of the longer lapse in reporting an event that, unlike the first job, would not be of particular psychological importance.⁴ Second, the edited information currently available does not readily permit us to adjust for education obtained between 1955 and 1958. We have shown that about 19 percent of those in the sample finished their education after 1955 and much of this probably occurred soon after 1955; hence, education variables used in the 1958 analysis contain more measurement error.

Equations 5 and 6 in Table H-1 again indicate that the effect of ability is insignificantly greater at the graduate, compared with the nongraduate, level. When mathematical ability is used in equation 4, only the fifth fifth is significant, and only the fourth and fifth fifths of the biography variable are significant. In other years, the top three fifths of both variables were significant. In light of the fact that in 1955 the second through fourth fifths added no more than \$600 a year to income, it is quite possible that these differences are obscured by improper recall of 1958 information.

Response error also seems involved in the returns to educa-

Earnings of average
 member of preceding
 education level

10
 -2
 5
 -8
 19

14
 9
 -2
 6
 18

³The mean incomes were not calculated holding constant the other determinants of income, but this should not greatly change the ratio of the returns in the two years.

⁴Rogers (1967), however, concluded after an interesting experiment that the response errors on income earned both five and ten years earlier were no greater than for current income.

on class from equation 3, Table
 age age, 36. 1968: Incomes of
 Table H-1; absolute increases

tion reported in Table H-2. Holding ability, background, age, and biography constant, the extra income due to education is about 10 and 13 percent for those with some college and some graduate work, 7 and 4 percent for those with undergraduate and master's degrees who are not teachers, and 23 and 85 percent for Ph.D.'s and M.D.'s, respectively. The increase for Ph.D.'s and M.D.'s over 1955 is plausible, since in 1955 they would only recently have graduated and entered on the steepest portion of their age-income profile. But both the magnitude of the very small returns to the undergraduate-degree and master's-degree holders and their drop from 1955 levels seems strange. Before completely disregarding the returns at lower levels, one possible explanation can be offered. The period after 1955 witnessed some extremely large wage-rate increases. Although 1958 was a recession year, the high school graduates who were skilled workers would have had seniority and would probably have had skills needed to be good workers; hence, they would suffer less from layoffs than other union members. The college graduates, on the other hand, may have received smaller wage increases and bonuses because of the profit declines beginning in 1957. All in all, however, we attribute these strange results to measurement error and do not spend more time with the 1958 data.

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