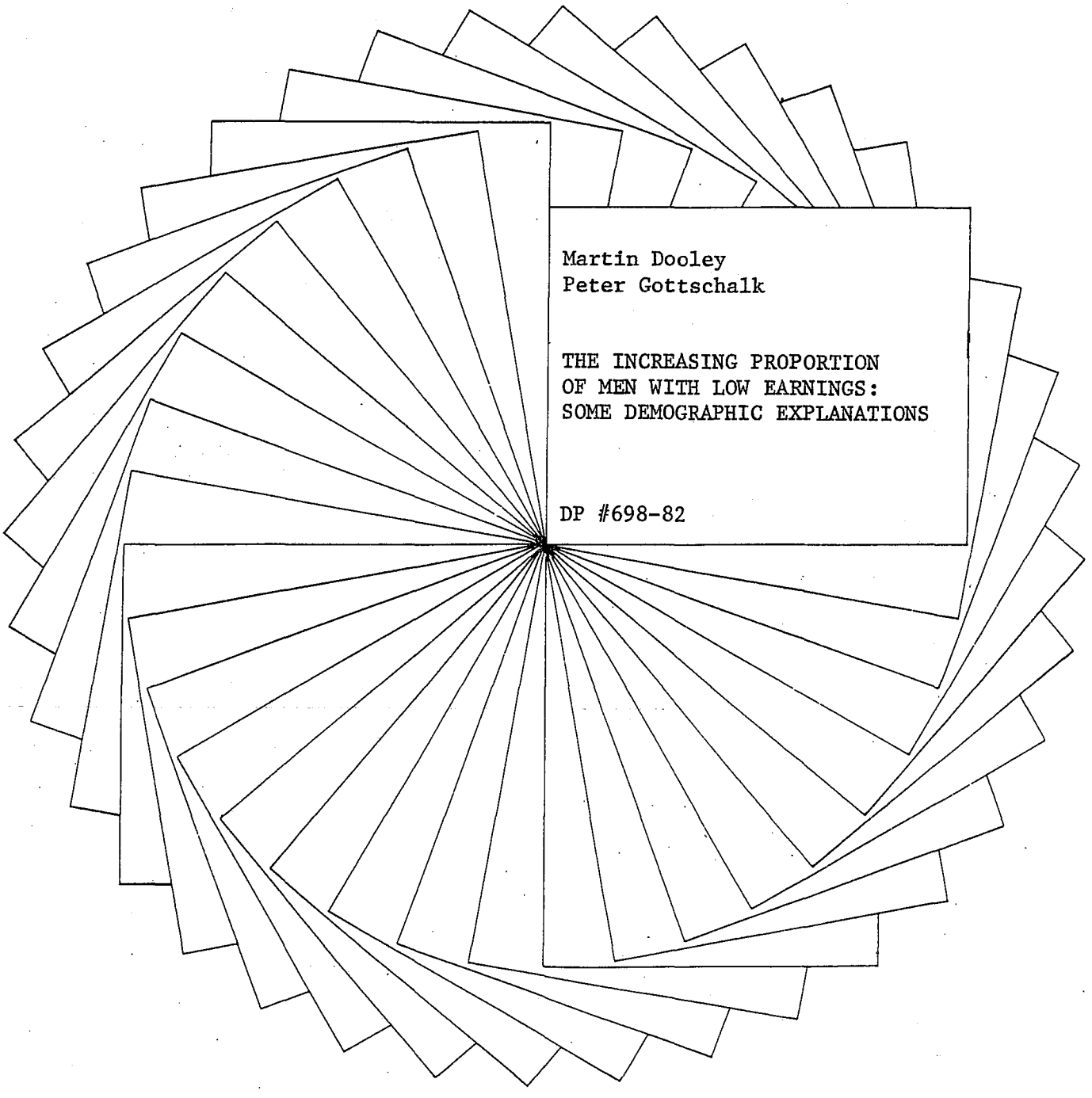
University of Wisconsin-Madison

Institute for Research on Poverty

Discussion Papers



Martin Dooley
Peter Gottschalk

THE INCREASING PROPORTION OF MEN WITH LOW EARNINGS: SOME DEMOGRAPHIC EXPLANATIONS

DP #698-82

The Increasing Proportion of Men with Low Earnings: Some Demographic Explanations

Martin Dooley
Department of Economics
McMaster University

and

Peter Gottschalk
Department of Economics
Bowdoin College

August 1982

This research was partially supported by the Department of Labor and the National Institute of Mental Health, Award No. F32 MH08072. The research assistance of Helen Hamilton Roberts and Tim Maloney is gratefully acknowledged.

ABSTRACT

Data from the March 1967 through 1978 Current Population Reports of the U.S. Bureau of the Census are used to analyze the proportion of men with zero earnings and the proportion with low annual or weekly earnings. Conditional logit analysis is used to control for education, experience, cyclical conditions, and cohort size.

The most important findings are that, after controlling for these factors, the proportion of males 16 to 62 with low annual earnings has been growing for all education classes. High school graduates and college dropouts also experienced an increase in the probability of low weekly earnings. All education groups except college graduates experienced an increase in the proportion of men with zero earnings.

These findings stand in contrast to those of Finis Welch, using similar data, of a growth in mean annual and weekly earnings net of a similar set of independent variables for all education groups. There is, therefore, evidence that over the decade 1967-78 there was an increase in inequality among men at the bottom of the earnings distribution.

The Increasing Proportion of Men with Low Earnings: Some Demographic Explanations

The 1970s was a decade of slow but positive growth in the average real wages of male workers. Several recent studies, however, provide indirect evidence that the growth in average earnings may not have been shared by those in the lower tail of the male earnings distribution. Danziger and Plotnick (1982) find no decrease in pretransfer poverty during the late 1960s and early 1970s, even though posttransfer poverty declined over the same period. Gottschalk (1978), focusing on labor market earnings, finds that the proportion of households with earnings below the poverty line increased, even after controlling for unemployment. Households headed by nonaged men show no net decrease in the incidence of low earnings, in spite of the increase in real median earnings over the same period.

There are two sets of plausible demographic explanations for the above findings. The first set concerns the distribution of earnings across households rather than the distribution of earnings across individuals. Both Gottschalk and Danziger and Plotnick use household earnings and a needs-based poverty line. Hence, changes in the distribution of persons and/or earners across households may affect their measures.

A second set of demographic explanations focuses directly on changes in the male earnings distribution. As is well known, the age composition of the labor force changed substantially during the 1970s due to the entry into the labor market of the baby boom. The number of young workers substantially increased relative to the entire work force.

Therefore, growth was especially marked among those groups with the highest probability of low earnings. This could have increased the overall incidence of low earnings despite a constant (or even falling) incidence of low earnings within age groups. Moreover, as Welch (1979) and Freeman (1979) have shown, the entry into the labor market of the "baby boom" population depressed the average earnings of young workers in the 1970s.[1] Since young workers are concentrated near the bottom of the earnings distribution, there may have been a substantial increase in the incidence of low earnings among the young, thereby raising still further the overall proportion of low earners.

The effect of the entrance of the baby boom cohort on the lower end of male earnings distribution should be transitory. The growth rate of labor force entrants relative to more experienced workers will slow considerably during the last two decades of this century as the baby boom matures. Other things being equal, this will lower the proportion of (young) individuals with low ernings in the labor force and possibly reduce the incidence of low earnings among the young. Moreover, Welch's findings indicate that the earnings-depressant effect created by the large baby boom cohort may decrease as they acquire experience and become better substitutes for the rest of the labor force.

The purpose of this study is to assess the magnitude of recent changes in the lower tail of the male earnings distribution and the relation of such changes to family needs. Consequently, we take various steps to explore the role of aforementioned sets of demographic factors in explaining the reported growth in "earnings poverty."

First, we focus on the earnings of individuals instead of households in order to control for the effects of change in the number of earners per household. Second, we focus on men, since it is for this group that we have the firmest theoretical and empirical basis for predicting the effect of the baby boom cohort's entrance into the labor market.[2] Third, in order to see whether changes in needs can account for the rise in earnings poverty, we compare earnings with both family poverty lines and with a fixed (in real terms) threshold.

Two additional steps are taken to explore the effect of the baby boom cohort on the distribution of individual earnings. Our measures of the incidence of low earnings are calculated conditional on education and experience. By comparing men with the same levels of experience and education in different years we can see whether changing weights are responsible for the overall increases in the probability of having low earnings. Furthermore, we estimate logit functions to see whether cohort size, found by Welch to affect mean earnings, can also be used to explain the increase in the probability of zero or low earnings conditional on education or experience.

The results provide information relevant to public policy. The earnings of less-skilled workers constitute a major concern of public policy. Our results offer a detailed picture of the extent to which the earnings of such individuals reflect the earnings gains of the average worker; do the earnings trends among low-wage workers reflect transitory shifts associated with the labor force entry of large cohorts of the recent past? If demographic shifts are the principal cause of the increase in the number of persons with low earnings, then we can expect a

reversal of the trend in the coming decades as smaller cohorts (the "baby bust" population) enter the labor force.

Our methodology and data are described in the next section, followed by a presentation of the empirical results. The last section contains a summary and conclusion.

Data and Methodology

We use data from the Current Population Survey (CPS) for March 1968 through 1979.[3] Our sample is restricted to civilian men between the ages of 16 and 62, not currently in school (as major activity in the "last week" category), who either worked 50-52 weeks in the previous year or reported the reason for working fewer weeks as something other than "in school" or "retired." Those who are self-employed or work without pay are also excluded from our sample. Finally, we follow the strategy used by Welch (1979) by omitting those individuals who had, or were likely to have had, earnings levels imputed by the Bureau of the Census.

Our sample contains 304,177 individual observations from the twelve surveys. For each year, these data are grouped into education-experience cells.[4] The four education categories used are the following: less than 12, 12, 13-15, and 16 or more years of schooling completed. As is well known, the CPS provides no direct information concerning labor force experience. We followed the procedure developed by Welch and Gould (1976) to allocate individuals to labor force experience categories.[5] The total number of education-experience cells is 1,960, each one containing at least 50 individual observations.

For each education-experience cell we calculate the proportion of people with zero earnings and the proportion with positive earnings below two different low earnings thresholds. The family needs threshold is the officially determined poverty line, which is a function of family size, composition, and residence. The fixed threshold is defined as a real wage of $3.00 per hour in 1975 prices, multiplied by a standard work week (40 hours) or work year (2,080 hours). This threshold, which is one-third higher than the 1975 minimum wage, was set high enough to ensure that there would be a sufficient number of subthreshold observations to obtain reliable estimates of the proportion of low earners in each cell.

We calculate the following variables for each education-experience cell in each year.

Pr (Z) = proportion with zero annual earnings

Pr (EP) = proportion with positive annual (or weekly) earnings below the threshold (i.e., earnings poor)

Pr (ENP) = proportion with annual or weekly earnings above the threshold (i.e., earnings nonpoor)

Part Time = proportion of part-week workers

CS = measure of cohort size (see description below).

Additional variables used in our analysis are the following:

Exper = years of labor force experience

Unem = aggregate civilian male unemployment rate

Trend = linear trend.

CS is a measure of relative cohort size, proposed by Welch (1979), which is constructed within educational groups as follows. First, the number of individuals in the i^{th} experience group in year t is divided

by the total number of individuals in year t. Second, in order to adjust for sampling error and measurement error with respect to experience, the proportion of group members at each experience level is smoothed by computing a five-year weighted moving average.[6] For a full description of this measure see Welch (1979).

EMPIRICAL RESULTS

Table 1 shows that over the period 1967 to 1978 the proportion of men with zero earnings grew from 3.3 to 6.4%. The proportion with annual earnings above zero but below the fixed threshold increased from 16.1 to 19.4%. This increase was not just a reflection of fewer weeks worked, since the proportion with weekly earnings below the fixed threshold rose from 13.5 to 15.2%. The proportion with earnings below the family needs threshold increased from 12.0 to 13.2%. Over the same period, average annual earnings (excluding persons with zero earnings) rose slighly (5.7% over the 12 year period), and weekly earnings likewise showed a small improvement (6.8%). These data confirm the existence of growth in the proportion of low earning men despite growth in the earnings of the average male worker.[7]

Does the increasing proportion of men with low earnings simply reflect changes in the experience composition of the labor force and changes in cyclical conditions? Or are the same patterns found conditional on experience and unemployment? If patterns reflect more than compositional or cyclical effects, are they explained by the earnings-depressant effect of cohort size? All of these questions can be addressed by estimating conditional logit models.

Table 1

Proportion of Men with Low Earnings, and Mean Earnings of Men, 1967-78

Year	(1) Percentage with Zero Earnings	(2) Percentage with Earnings Below Fixed Threshold[a] Annual	(3) Percentage with Earnings Below Fixed Threshold[a] Weekly	(4) Percentage with Annual Earnings Below Family Needs Threshold[a]	(5) Mean Earnings Annual Include Zeros	(6) Mean Earnings Annual Exclude Zeros	(7) Mean Earnings Weekly
1967	3.3%	16.1%	13.5%	12.0	$7,109	$7,354	$148
1968	3.5	16.1	11.8	11.2	7,339	7,603	153
1969	3.6	15.4	12.3	11.3	7,549	7,834	157
1970	4.3	16.6	12.5	13.1	7,342	7,674	157
1971	4.7	18.4	13.8	14.3	7,261	7,622	156
1972	4.9	17.3	13.3	13.3	7,604	7,997	162
1973	4.8	17.5	13.4	12.5	7,721	8,107	165
1974	5.8	18.9	14.4	13.3	7,256	7,706	157
1975	7.3	21.8	15.5	15.5	6,796	7,332	152
1976	6.9	20.9	15.3	14.6	7,004	7,506	155
1977	6.5	21.0	15.8	14.2	7,165	7,665	157
1978	6.4	19.4	15.2	13.2	7,282	7,777	158

Source: Annual March Current Population Survey. Sample is men aged 16-62. See text for full description.

[a]Persons with zero earnings excluded.

For annual earnings, the 1,960 year-education-experience cells are used to estimate trinomial logit equations. The three categories are (1) zero earnings, (2) earnings above zero but below the threshold and (3) earnings above the threshold. For weekly earnings, we estimate a binomial logit model;[8] the categories are weekly earnings above or below the threshold, given positive earnings. The use of weekly earnings, while controlling for the proportion of part-week workers, is an attempt to model the determinants of earnings capacity.[9] Categorical dependent variables are used instead of the continuous variable (earnings), since our specific interest is in changes in the lower tail of the earnings distribution.

The log odds of having zero or positive subthreshold earnings are assumed to be a function of education, experience, unemployment, and cohort size. Experience is entered as a linear and quadratic term, since it is typically found that earnings increase at a decreasing rate over the life cycle.

Cohort size is assumed to have a nonlinear effect. Welch found strong evidence that the effect of cohort size on mean earnings declines quite rapidly with experience. We adopt a functional form which incorporates this prior information but is less restrictive than the spline functions estimated by Welch. We allow the effect of experience to decrease quickly by interacting cohort size with the reciprocal of experience squared. This functional form allows the impact of cohort size to diminish in absolute value but not to change sign.

Finally, note that in the following tables we report only those logit estimates obtained <u>within</u> educational categories. At the end of this

section, we comment briefly upon the estimates obtained with combined data from all educational classes.

Logit Estimates with Family Needs Threshold

Table 2 contains the estimates of the trinomial logit model for annual earnings relative to the family needs threshold. The trend coefficients indicate that except for the highest education group, the log odds of having zero earnings increased over the sample period even after controlling for education, experience, cohort size, and unemployment rates. Based on the estimates in Table 2, the average annual increase in the probability of zero earnings was from 0.2 to 0.7 percentage points over the sample period, and generally declined with education.

The log odds of having positive subthreshold earnings, however, shows no significant trend. Hence, among men with some earnings, the conditional probability of having positive earnings insufficient to provide for family needs was not growing.[10]

The coefficients on unemployment, education, experience, and cohort size are interesting in their own right. The log odds of either zero or low annual earnings (relative to high earnings) decreases with education; increases with unemployment; and decreases with experience, but at a decreasing rate, and eventually starts to rise.

The minimum points of the experience profiles are at 15-20 and 25-30 years of experience for the log odds of zero and low positive earnings, respectively. This life-cycle pattern mirrors the typical concave shape of mean earnings profiles. The predicted increase in the log odds of zero or low positive earnings probably indicates the rise with age of

Table 2

Conditional Logit Estimates of Probability of Having Annual Earnings Equal to Zero, or Having Earnings Positive but below Family Needs Threshold, or Earnings above Family Needs Threshold

(Asymptotic normal statistics in parentheses)

	Intercept	CS	CSx(1/Exper^2)	Exper	Exper^2	Unem	Trend
			Education: less than 12 years				
ln [Pr(Z)/Pr(ENP)]	-2.8**	-.020	1.89**	-0.067**	.0019**	.12**	.074**
	(14.7)	(.3)	(7.9)	(5.6)	(8.6)	(4.0)	(6.2)
ln [Pr(EP)/Pr(ENP)]	-.40**	.043	2.01**	-.090**	.0012**	.065**	.006
	(2.7)	(.6)	(9.0)	(10.0)	(6.7)	(2.6)	(.6)
			Education: 12 years				
ln [Pr(Z)/Pr(ENP)]	-4.6**	-.025	.60**	-.045**	.0021**	.10**	.080**
	(9.8)	(.3)	(4.1)	(2.1)	(5.25)	(2.3)	(4.2)
ln [Pr(EP)/Pr(ENP)]	-1.5**	-.022	.92**	-.15**	.0028**	.094**	.0087
	(6.0)	(.4)	(13.5)	(10.0)	(8.8)	(3.2)	(.7)
			Education: 13-15 years				
ln [Pr(Z)/Pr(ENP)]	-5.5**	.12	.35**	.021	.0021**	.070	.073**
	(4.6)	(.6)	(1.3)	(.4)	(2.1)	(.8)	(2.1)
ln [Pr(EP)/Pr(ENP)]	-2.2**	.056	.72**	-.17**	.0036**	.10**	.010
	(4.0)	(.6)	(7.6)	(5.3)	(5.3)	(2.0)	(.5)
			Education: 16 years or more				
ln [Pr(Z)/Pr(ENP)]	-5.9**	.019	.49	-.009	.0022*	.14	.011
	(4.2)	(.1)	(.8)	(.1)	(1.7)	(1.3)	(.3)

(tables continues)

Table 2 (cont.)

Conditional Logit Estimates of Probability of Having Annual Earnings Equal to Zero, or Having Earnings Positive but below Family Needs Threshold, or Earnings above Family Needs Threshold

(Asymptotic normal statistics in parentheses)

	Intercept	CS	CSx(1/Exper^2)	Exper	Exper^2	Unem	Trend
ln [Pr(EP)/(ENP)]	-3.1**	-.094	1.22**	-.010**	.0022**	.14**	-.002**
	(4.8)	(.9)	(5.8)	(2.4)	(2.2)	(2.2)	(.1)

Pr(Z) = Probability of zero annual earnings.
Pr(EP) = Probability of positive annual earnings less than family needs threshold.
Pr(ENP) = Probability of positive annual earnings greater than family needs threshold.
CS = Cohort size measure (see text).
**implies t-ratio greater than 1.9.
*implies t-ratio greater than 1.6 but less than 1.9.

both work-limiting disabilities and voluntary partial retirement. Given the nonlogitudinal nature of our data, however, this curvature may reflect both life-cycle and cohort differences.

Although the linear coefficients of cohort size are not statistically significant, the coefficients for the interaction term (CS · $1/exper^2$) are all positive, and all but one exhibit t-ratios which exceed conventional threshold levels. In other words, a rise in relative cohort size increases the probability of zero or subthreshold earnings, but this effect diminishes with experience, as found by Welch. The estimated probability effects, however, are not large. At five years of experience, an increase of 1 percentage point (the units of measurement for CS) in cohort size raises the probability of zero earnings by 0.2 percentage points or less, with the corresponding elasticities ranging from .10 down to .05 as years of schooling increase. The corresponding effects on the probability of positive subthreshold earnings range from 1.8 down to 0.3 percentage points as the level of education rises. However, the elasticities are all roughly equal to .20.

Logit Estimated with Fixed Threshold

The absence of an increase in the proportion of men with positive annual earnings below the family needs threshold may reflect offsetting changes in the joint distribution of earnings and needs. In order to focus attention on the earnings distribution, Table 3 presents the logit estimates obtained using annual earnings and the fixed threshold. The trend coefficients for the log odds of zero earnings are similar to those obtained with the family needs threshold. Unlike the results in Table 2,

Table 3

Conditional Logit Estimates of Probability of Having Annual Earnings Equal to Zero, or Having Earnings Positive but Less Than Fixed Threshold, or Earnings Greater than Fixed Threshold

(Asymptotic normal statistics in parentheses)

	Intercept	CS	CSx(1/Exper^2)	Exper	Exper^2	Unem	Trend
			Education: less than 12 years				
ln [Pr(Z)/Pr(ENP)]	-2.56**	.064	2.2**	-.10**	.0024**	.12**	.080**
	(13.5)	(.7)	(7.3)	(7.5)	(10.4)	(4.0)	(6.7)
ln [Pr(EP)/Pr(ENP)]	.18	.132*	2.15**	-.14**	.0024**	.040*	.015*
	(1.3)	(1.8)	(7.4)	(15.5)	(14.1)	(1.7)	(1.6)
			Education: 12 years				
ln [Pr(Z)/Pr(ENP)]	-4.50**	-.034	.83**	-.051**	.0022**	.11**	.082**
	(9.6)	(.35)	(5.5)	(2.4)	(5.5)	(2.5)	(4.3)
ln [Pr(EP)/Pr(ENP)]	-.93**	-.065	1.04**	-.18**	.0035**	.092**	.027**
	(4.2)	(1.4)	(12.9)	(13.8)	(13.0)	(3.7)	(2.5)
			Education: 13-15 years				
ln [Pr(Z)/Pr(ENP)]	-5.49**	.127	.52**	-.029	.0023**	.073	.075**
	(4.6)	(.6)	(1.9)	(.5)	(2.3)	(.9)	(2.1)
ln [Pr(EP)/Pr(ENP)]	-1.56**	.068	.75**	-.20**	.0045**	.090**	.027*
	(3.3)	(.8)	(7.5)	(7.4)	(8.0)	(2.6)	(1.6)
			Education: 16 years or more				
ln [Pr(Z)/Pr(ENP)]	-5.78**	.012	.63	-.015	.0024*	.14	.013
	(4.1)	(.1)	(1.1)	(.2)	(1.8)	(1.3)	(.3)

(table continues)

Table 3 (cont.)

Conditional Logit Estimates of Probability of Having Annual Earnings Equal to Zero, or Having Earnings Positive but Less Than Fixed Threshold, or Earnings Greater than Fixed Threshold

(Asymptotic normal statistics in parentheses)

	Intercept	CS	CSx(1/Exper^2)	Exper	Exper^2	Unem	Trend
ln [Pr(EN)/Pr(ENP)]	-1.80**	-.097	1.05**	-.20**	.0045**	.09*	.032*
	(3.8)	(1.2)	(6.5)	(6.7)	(5.9)	(1.8)	(1.6)

Pr(Z) = Probability of zero annual earnings.
Pr(EP) = Probability of positive annual earnings less than fixed threshold.
Pr(ENP) = Probability of positive annual earnings greater than fixed threshold.
CS = Cohort size measure (see text).
**implies t-ratio greater than 1.9.
*implies t-ratio greater than 1.6 but less than 1.9.

however, the trend coefficients for the log odds of positive earnings below the fixed threshold are positive and significant in all educational categories. The estimates in Table 3 indicate that the average annual increase in the probability of positive, subthreshold earnings was between 0.3 and 0.5 percentage points. This indicates that decreased needs, rather than increased earnings, were responsible for the results in Table 2. Furthermore, the evidence suggests that demographic factors discussed in the first section are not sufficient to explain the increase in the proportion of men with zero earnings or the proportion with positive annual earnings below a fixed threshold.

Does this reflect a decrease in the weeky earnings or in the number of weeks worked? Table 4 presents the binomial logit model of weekly earnings. The trend coefficients indicate that the log odds of weekly earnings below the fixed threshold increased over the sample period. The average annual increases in the probability of subthreshold earnings are similar to those for annual earnings, that is, the range is from 0.3 to 0.5 percentage points. However, the trend coefficients in Table 4 are significant only for high school graduates and college dropouts. Hence, for high school dropouts and college graduates, the major source of the increase in the probability of positive annual earnings below the fixed threshold may have been a decline in weeks worked.

The coefficients on all control variables are quite similar in Tables 2 and 3. However, there are two notable differences between the results for annual and weekly earnings (Tables 3 and 4). First, unemployment has a strong impact on the log odds of subthreshold annual earnings, but not weekly earnings. Hence, as one might expect, cyclical factors have a

Table 4

Conditional Logit Estimates of Probability of Having (Positive) Weekly Earnings below or above Fixed Threshold

(Asymptotic normal statistics in parentheses)

	Intercept	CS	CSx(1/Exper^2)	Exper	Exper^2	Unem	Part-time	Trend
				Education: less than 12 years				
ln [Pr(EP)/Pr(ENP)]	-.33**	.21**	-.047	-.14**	.0022**	-.009	4.2**	.013
	(2.1)	(2.8)	(.2)	(14.0)	(12.9)	(.4)	(4.7)	(1.4)
				Education: 12 years				
ln [Pr(EP)/Pr(ENP)]	-2.1**	.17**	.046	-.15**	.0031**	.014	7.8**	.036**
	(7.0)	(2.6)	(.3)	(9.4)	(9.4)	(.48)	(5.6)	(3.0)
				Education: 13-15 years				
ln [Pr(EP)/Pr(ENP)]	-2.46**	.14*	-.11	-.17**	.0039**	.025	5.9**	.043**
	(4.5)	(1.6)	(.6)	(5.7)	(5.6)	(.5)	(4.9)	(2.2)
				Education: 16 years or more				
ln [Pr(EP)/Pr(ENP)]	-2.12**	-.09	.37	.18**	.0043	.040	6.3**	.027
	(3.8)	(1.0)	(1.0)	(5.1)	(4.9)	(.7)	(2.1)	(1.1)

Pr(EP) = Probability of positive weekly earnings less than fixed threshold.
Pr(ENP) = Probability of positive weekly earnings greater than fixed threshold.
CS = Cohort size measure (see text).
**implies t-ratio greater than 1.9.
*implies t-ratio greater than 1.6 but less than 1.9.

larger influence on weeks worked than on earnings capacity. Second, for annual earnings the linear cohort size is insignificant but the interaction is significant. Cohort size matters only at low levels of experience. For weekly earnings the pattern is reversed. The implication is that a rise in cohort size increases the probability of subthreshold weekly earnings by a constant amount over the life cycle for those with up to 15 years of education. (The corresponding elasticities range from .35 down to .20 as one increases years of schooling.)

It may, at first, seem incongruous that changes in any variable could raise the probability of low weekly but not low annual earnings, which our estimates indicate is the case for more experienced workers. The incongruity arises since the low weekly earners constitute a subset of those with low (positive) annual earnings. The annual threshold is the maximum number of weeks which one may work in a year. However, what our results indicate is that an increase in cohort size may transform some workers with low annual but not low weekly earnings into workers with low annual and low weekly earnings. The proportion of low annual earners who are also low weekly earners drops with experience in our data. In other words, weeks unemployed, rather than low weekly earnings, is a more important source of low annual earnings among older workers. However, older workers with high unemployment rates are also more likely to have weekly earnings near the threshold. Hence, the wage depressant effect of cohort size may well serve to increase the proportion of low weekly earners among those who already have low annual earnings.

Explanation for Trends

We have produced substantial evidence of stagnation at the lower tail of the male earnings distribution; a trend not fully explained by our independent variables. The importance of this result is highlighted by the fact that Welch estimated a positive trend in mean earnings using an almost identical set of independent variables and a very similar data set. In other words, the low-skilled worker appears to have fared poorly relative to the average worker for reasons unrelated to labor force composition, the unemployment rate, or cohort size as measured in our study.

There are several possible explanations for this trend which demand further investigation. The first is simply that we have not examined the hourly wage distribution and our control for the proportion of part-week workers does not fully compensate for this inadequacy. Our results might primarily indicate decreasing weekly hours of work among low-wage workers, possibly in response to the increasing size of public transfer programs. However, if declining labor supply were the principal explanation for our findings, then one would expect to observe trends in the probability of positive, subthreshold annual earnings which would be substantially larger than the corresponding probability trends based on weekly earnings. This would be particularly so since the benefits of several of the most important transfer programs for which adult males are eligible--unemployment and workers' compensation--are conditional on the number of weeks worked. This explanation, however, was not strongly supported by our estimates.

A second explanation for the rise in the education-specific proportions of low earners might simply be increases in the average level of

education over the sample period, especially given the often heard claim of falling passing standards at most grade levels. Falling standards could have lowered the average ability in each education category, thus leading to an increase in the proportion with low earnings within each education group. A test of this hypothesis is to see whether the positive time trends still appear when the logit equations are estimated with data aggregated across education, not experience, groups. When this is done the trend coefficients for annual and weekly earnings, using the fixed threshold, are of the same magnitude and continue to be significant.[11]

A third factor ignored in our study is the increasing labor supply of women, especially married women. However, the labor supply of this group has been growing since at least the turn of the century, a period during which there was a large drop in the proportion of male and female earners below our fixed threshold.

Finally, it must be emphasized that even those factors included in our model are fraught with measurement error. The controls for education, experience, and unemployment all fall short of ideal. The cohort size measure, proposed by Welch and employed in this study, arises from a tractable, yet highly simplified, model of labor market processes.

Summary and Conclusion

This study has provided an examination of recent changes in the lower tail of the male earnings distribution. Data from the CPS for March 1967 through 1978 were used to analyze trends in the proportion of male workers with low annual and low weekly earnings.

Conditional logit analysis was used to examine the roles of education, experience, cyclical conditions, and cohort size in explaining variations in the probability of zero earnings, positive but subthreshold earnings, and above threshold earnings. Both a family needs and a fixed earnings threshold were used.

The most important findings from the analysis concern the trends which were estimated net of education, experience, unemployment, and cohort size. Our independent variables appear to explain satisfactorily the recent growth in the proportion of men with positive earnings below the family needs threshold, that is, the net trend coefficients were not significant. However, conditional on other earnings determinants, the proportion of high school graduates and college dropouts with weekly earnings below a fixed threshold has been growing. The proportion with low annual earnings has been growing in all education classes.

These findings stand in contrast to Welch's finding, with similar data, of a positive trend for mean annual and weekly earnings net of a similar set of independent variables. Hence, we have provided substantial evidence of stagnation in the lower tail of the male earnings distribution--a stagnation not shared by the average worker nor fully explicable by education, experience, aggregate unemployment or the entrance of the baby boom cohort into the labor market.

Several additional sources of the growth in the proportion of low earners were briefly discussed, such as changes in female labor supply and transfer programs. None of these factors appears to provide a fully satisfactory explanation for our findings. Given the substantial concern with the economic welfare of low-skilled workers, further systematic investigation is clearly warranted.

NOTES

[1]Freeman (1979) also examines the impact of the labor market entry of the baby boom, but the focus of the article is on the relative earnings of young to old.

[2]In no way do we wish to minimize the importance of the growth in the proportion of families headed by women and the relation of this phenomenon to the poverty problem (Ross and Sawhill, 1975). We focus on men in order to avoid the complex theoretical and empirical issues raised in modeling the life-cycle labor supply of women, which would make it considerably harder to isolate the impact of the labor market entry of the baby boom.

[3]Panel data such as those provided by the Panel Study of Income Dynamics or the National Longitudinal Surveys would clearly be desirable for our analysis. However, the sample size in such data sets is much too limited to analyze intercohort changes in the proportion of low earners. The CPS files lack the virtue of multiple observations on a fixed sample, yet the availability of numerous independent samples of individual observations covering an extended period of time provides opportunities not open to earlier studies with aggregate data.

[4]Sample size precluded separate analyses by race. Numerous education-experience cells had less than 10 observations on nonwhites.

[5]Welch and Gould (1976) used data from the 1940, 1950, 1960, and 1970 Censuses of the Population and the Coleman-Rosi sample to estimate age of entry into the labor force for men conditional on observed age, education, and birth cohort. These data were kindly provided to the authors

by Finis Welch. Current age minus estimated age of labor force entry was used to estimate labor force experience. The number of experience cells differed by educational level in the following manner: less than 12 years of education, 46 experience cells; 12 years of education, 42 experience cells; 13-15 years of education, 39 or 40 experience cells depending on the survey year; 16 or more years of education, 36-37 experience cells depending on the survey year.

[6]The weights are: 1/9, 2/9, 1/3, 2/9, 1/9, except for the youngest and oldest cohorts. In these cases, the distribution is truncated and remaining weights are scaled accordingly.

[7]Since the CPS data are not longitudinal, one cannot infer that the same indivdiuals are found below the low earnings threshold at different points in time. Indeed the composition of the "earnings poor" is undoubtedly subject to continual change.

[8]The logit estimates were obtained by generalized least squares using the grouped data described in the section on data and methodology. These estimates can be shown to be asymptotically equivalent to maximum likelihood estimates (Grizzle, Starmer, and Koch, 1969).

[9]Although there is some information available on weekly hours of work from the CPS, this is very limited in the pre-1976 samples. In the logit results for weekly earnings, we control for the proportion of part-week workers. The proportion of part-week workers never exceeds 4% in any year and this proportion is trivial among those with at least 13 years of education.

[10]Note that our sample is not confined to male heads of families. Over our sample period, the proportion of nonfamily heads in our total sample was growing due to the declining average age. Note, however, that the trend coefficient measures the average increase in the log odds of low earnings within experience categories.

[11]The percentages in each of the education classes were added as regressors. The trends coefficients and their t-statistics are as follows:

Fixed Threshold	Trend (t)
ln Pr(Z)/Pr(ENP)	.060 (7.5)
ln Pr(EP)/Pr(ENP)	.028 (4.7)
ln Pr(WP)/[1-Pr(WP)]	.036 (5.0)

REFERENCES

Danziger, S., and Plotnick, P. 1982. The war on income poverty: Achievements and failures. In Welfare reform in america, ed. P. Somers. Boston: Kluwer-Nijhoff.

Freeman, R. 1979. The effect of demographic factors on age-earnings profiles. Journal of Human Resources, 14, 289-318.

Gottschalk, P. 1978. Earnings, transfers, and poverty reduction. In Research in labor economics, vol. 2, ed. R. Ehrenberg. Greenwich, Conn.: JAI Press.

Grizzle, J., Starmer, C. F., and Koch, G. G. 1969. Analysis of categorical data by linear models. Biometrics, 25, 489-504.

Ross, H. and Sawhill, I. 1975. Time of transition: The growth of families headed by women. Washington, D.C.: The Urban Institute.

Welch, F. 1979. Effects of cohort size on earnings: The baby boom babies' financial bust. Journal of Political Economy, 87, 565-597.

Welch, F. and Gould, W. 1976. An experience imputation or an imputation experience. Unpublished paper, Department of Economics, University of California, Los Angeles, October.