DOCUMENT RESUME

ED 102 282 UD 014 870

AUTHOR Garfinkel, Irwin; Masters, Stanley
TITLE The Effect of Income and Wage Rates on the Labor Supply of Young Men and Women. Discussion Paper No. 226-74.
INSTITUTION Wisconsin Univ., Madison. Inst. for Research on Poverty.
SPONS AGENCY Office of Economic Opportunity, Washington, D.C.
REPORT NO IRP-DP-226-74
PUB DATE Oct 74
NOTE 55p.

EDRS PRICE MF-$0.76 HC-$3.32 PLUS POSTAGE
DESCRIPTORS Age Differences; Economic Research; Employment Patterns; Employment Trends; Guaranteed Income; *Income; *Labor Economics; Labor Market; Labor Supply; Sex Differences; Statistical Analysis; *Student Employment; *Wages; *Young Adults

ABSTRACT

While static economic theory predicts that most income transfer programs will lead to reductions in the labor supply of program beneficiaries, the theory has nothing to say about the magnitude of such reductions. In order to predict the magnitude of such reductions, the labor supply schedule of potential beneficiaries must be known. In previous papers we presented estimates of the effects of income and wage rates on the labor supply of prime age males and females. In this paper we present and discuss similar results for men and women aged 20 to 24. Probably the most interesting aspect of the labor supply decision of young people is its interconnection with the decision of how much time to spend in school. The importance of the role of education is reflected here. In the first section of the paper we present our basic models, describe the data that we shall use for testing the models and discuss our a priori expectations with regard to the magnitude of (and biases in) the various elasticity estimates. In the second section we present income elasticity estimates for married men, single men, and single women. Similar estimates for married women are presented in section three, while wage and substitution elasticities are discussed briefly in section four. The final section contains a very brief summary and conclusion. (Author/JM)

226-74

INSTITUTE FOR RESEARCH ON POVERTY DISCUSSION PAPERS

THE EFFECT OF INCOME AND WAGE RATES ON THE LABOR SUPPLY OF YOUNG MEN AND WOMEN

Irwin Garfinkel

Stanley Masters

UNIVERSITY OF WISCONSIN-MADISON

THE EFFECT OF INCOME AND WAGE RATES ON THE LABOR SUPPLY OF YOUNG MEN AND WOMEN

Irwin Garfinkel

Stanley Masters

October 1974

The research reported here was supported in part by the Institute for Research on Poverty pursuant to the provisions of the Economic Opportunity Act of 1964.

ABSTRACT

In this paper we estimate the effect of income and wage rates on the labor supply of men and women, ages 20-24. Economic theory predicts a positive substitution effect and, providing leisure is a normal good, a negative income effect. In general, we do find such effects empirically. The magnitude of the results depends very heavily on whether or not we control for the young person's school status.

THE EFFECT OF INCOME AND WAGE RATES ON THE LABOR SUPPLY OF YOUNG MEN AND WOMEN

INTRODUCTION

While static economic theory predicts that most income transfer programs will lead to reductions in the labor supply of program beneficiaries, the theory has nothing to say about the magnitude of such reductions.[1] In order to predict the magnitude of such reductions, the labor supply schedule of potential beneficiaries must be known.

In previous papers we presented estimates of the effects of income and wage rates on the labor supply of prime age males and females. In this paper we present and discuss similar results for younger men and women, those aged 20-24.[2]

Young males work less than prime age males. As Table 1 indicates, however, those not in school work about as much as prime age males. The difference between the labor supply of young and prime age males is, therefore, attributable to school. For single females the differential by age (for those not in school) is a little larger than for males, but it is still not very dramatic. For married women, on the other hand, the younger women work more than the prime age group (with or without standardizing for differences in status of children).

Probably the most interesting aspect of the labor supply decision of young people is its interconnection with the decision of how much time to spend in school. Just as married women and female heads allocate their time between market work, home work, and leisure, young people allocate their time between market work, school, and leisure. In this

TABLE 1

SEO Mean Values for Married and Single Males and Single Females, Ages 20-24

	Married Males Not Living with Parents				Single Males Living with Parents				Single Females Living with Parents, no Kids			
	Total	School[a]	No School[a]	25-54	Total	School[a]	No School[a]	25-54	Total	School[a]	No School[a]	25-54
HLF_A	1868	828	1999	1965	1026	479	1678	1791	1197	498	1621	1771
$HEMP_A$	1805	819	1931	1918	943	455	1526	1668	1126	485	1514	1720
$EMPDUM_A$	.98	.86	1.00	.98	.88	.84	.92	.93	.88	.93	.90	.92
HWK_{SW}	38.2	21.7	40.8	41	19.7	9.1	30.2	36	23.1	8.4	30.2	35.8
$HWK_{SW} \geq 40$	34.0	21.1	36.0	35	17.4	8.1	26.7	31	21.3	6.7	28.4	32.3
$WKDUM_{SW}$	.90	.68	.94	.91	.52	.31	.73	.80	.61	.34	.75	.85
SLY	.11				.54				.38			
SLW	.14				.50				.33			
ACTLY	1.00				.96				.94			
ACTLW	.95				.85				.82			
P.W.	2.65	2.87	2.62	3.53	2.25	2.23	2.27	2.90	2.08	2.21	2.01	2.38
NEY3[b]	52	83	47	277	826	1006	670	295	920	1162	823	724
NEY1[b]	75	150	63	300	866	1048	684	313	991	1224	877	744
OthEarn	1630	2925	1423	1666	9402	11550	7253	1057	9070	10899	8179	2789
AnnEarn	4932	3445	5169	6770	1977	1159	2796	5562	1925	680	2532	4075
TotInc	6637	6520	6655	8736	12245	13757	10733	6619	11986	12803	11534	7608
N	589	81	508	6263	612	306	306	613	464	152	312	392

[a]School status refers to the survey week, with the exception of the means for the annual labor supply measures. The mean total incomes for married males, single males, single females, all married women, married women with children, and married women without children are 5862, 13547, 12433, 11715, 5855, 5878, and 5839 respectively for those in school during the year and 6735, 10693, 11714, 7143, 6679, and 8199 respectively for those not in school during the year. These values were used in calculating the income elasticities for the annual measures of labor supply.

[b]NEY1 includes miscellaneous NEY (e.g., scholarships) while NEY3 does not.

TABLE 1A

Mean Values for Wives, Ages 20-24
(Not Living with Parents or with Child > 5)

	Total				Child < 6				No Child			
	Total	School[a]	No School[a]	25-54	Total	School[a]	No School[a]	25-54	Total	School[a]	No School[a]	25-54
HLF_A	810	518	838	694	511	331	521	380	1407	6 1	1560	1089
$HEMP_A$	771	507	797	671	472	337	480	367	1367	618	1516	1053
$EMPDUM_A$	.62	.77	.61	.51	.49	.79	.47	.35	.89	.76	.91	.68
HWK_{SW}	14.3	9.7	14.6	12	9.6	7.7	9.8	7	23.7	10.7	25.2	19
$HWK_{SW} \leq 40$	13.9	9.5	14.1	13	9.1	7.3	9.3	7	23.3	10.7	24.8	20
$WKDUM_{SW}$	.40	.32	.40	.37	.27	.45	.49	.20	.65	.40	.67	.54
SLY	.09				.05				.16			
SLW	.06				.03				.11			
ACTLY	.64				.29				.93			
ACTLW	.43				.50				.71			
P.W.	2.07	3.00	2.01	2.19	1.95	3.04	1.91	2.17	2.30	2.98	2.21	2.24
NEY3	48	71	48	411	42	146	38		60	30	70	
NEY1	108	340	95	443	87	404	77	251	150	305	136	574
OthEarn	5488	4069	5553	8282	5705	4704	5713	7934	5054	3720	5200	7749
OwnEarn	1455	1092	1474	1476	868	827	870	655	2625	1237	2800	2135
TotInc	7051	5501	7122	10201	6660	5935	6660	8840	7829	5262	8136	10458
N	539	31	508	6662	360	11	349	2384	179	20	159	1597

[a]School status refers to the survey week, with the exception of the means for the annual labor supply measures. The mean total incomes for married males, single males, single females, all married women, married women with children, and married women without children are 5862, 13547, 12433, 11715, 5855, 5878, and 5839 respectively for those in school during the year and 6735, 10693, 11714, 7143, 6679, and 8199 respectively for those not in school during the year. These values were used in calculating the income elasticities for the annual measures of labor supply.

paper the role of education is nearly as important as the role it plays in the lives of young people. Many of our a priori expectations about the relative magnitudes of income and substitution effects among the young derive from this critical role of education in young people's lives. In addition, the close relationship of the decisions to work and to go to school create some estimation problems.

In the first section of the paper we present our basic models describe the data that we shall use for testing the models and discuss our a priori expectations with regard to the magnitude of (and biases in) the various elasticity estimates. In the second section we present income elasticity estimates for married men, single men, and single women. Similar estimates for married women are presented in section III while wage and substitution elasticities are discussed briefly in section IV. The final section contains a very brief summary and conclusion.

I. MODEL FOR ESTIMATION

While the decisions of how much to work and how much to go to school are at least in part simultaneous ones, our primary interest is in the labor supply decision. Consequently we begin the analysis by focusing on a reduced form labor supply equation which captures both the direct and indirect (through education) effects of income on labor supply. This constitutes a significant departure from previous studies of the labor supply and/or school enrollment studies of young men and women. While there have been several studies of the determinants of school enrollment, activity status,[3] and the labor supply of young people not enrolled in

school, to our knowledge there have been no cross-sectional studies of the labor supply of young people which included students.

The problem with confining a labor supply study to nonstudents is that since school status itself is affected by income and wage rates, the income and substitution effects obtained from a nonstudent sample will be biased. In particular, to the extent that capital markets are imperfect and/or education is a consumption good, income will have a positive effect on school attendance and thereby a negative effect on the labor supply of students. Consequently, confining the sample to nonstudents will lead to a serious underestimate of the negative income effect on the labor supply of young people. Moreover as we argue below, the income elasticity of labor supply is likely to be much larger among students than among nonstudents.

Perhaps economists have excluded students from consideration in their estimation of labor supply functions for the young because of the obviously important distinction between leisure and schooling. But conceptually the distinction between housework and leisure is just as important.[4] Yet this latter distinction has not deterred economists from estimating market labor supply functions for wives. As a result we have learned quite a bit about the labor supply behavior of wives. By pursuing a similar path for young people we hope to gain similar insights.

In addition to examining the labor supply behavior of all young people in a reduced form equation which ignores the young person's school status, we will also examine the extent to which the income effects[5] on labor supply are attributable to the indirect effects through schooling. Moreover, we shall estimate the effect of income on schooling and also

the effect of income on labor supply holding schooling constant. Finally, we will compare the income and substitution elasticities of labor supply of those in and out of school.

II. DATA BASE AND VARIABLES

Our analysis is based on the Survey of Economic Opportunity (SEO), which was conducted in 1966 and 1967 as a supplement to the Current Population Survey. Data were collected from 30,000 households, consisting of (1) a national self-weighting sample of 18,000 households and (2) a supplementary sample of 12,000 households from areas with a large percentage of nonwhite poor. We use only the 1967 self-weighting portion of the sample in our analysis.[6]

A. Labor Supply Measures

Numerous measures of labor supply can be constructed from the SEO data. Adult household members were asked how many hours they worked last week, how many weeks they were employed last year, and whether they normally worked full or part time last year. Paid vacation and paid sick leave are included in the SEO definition of weeks employed but not in the definition of hours worked in the survey week. In addition, adults who worked less than 50-52 weeks or less than full time during most weeks were asked to give the major reason why they were less than full-time workers. (Unfortunately, adults who worked less than full time in the week prior to the survey were not asked why.) From the answers to these questions we have constructed the following measures of labor supply:

1. HLF_A = the product of weeks in the labor force (weeks employed plus weeks unemployed) and 40 if the individual either normally worked full time or wanted to work full time or 20 if the individual voluntarily worked part time.

2. $HEMP_A$ = the product of weeks employed and 40 if the individual normally worked full time during the year or weeks employed and 20 if the individual worked part time.

3. $EMPDUM_A$ = a dummy variable which assumes the value of 1 if $HEMP_A > 0$ and zero if $HEMP_A = 0$.

4. HWK_{SW} = hours actually worked during the survey week.

5. $HWK_{SW} \leq 40$ = HWK_{SW} or 40, whichever is smaller.

6. $WKDUM_{SW}$ = a dummy variable equal to 1 if $HWK_{SW} > 0$ and zero if $HWK_{SW} = 0$.

There are several important differences among these variables. The last five are measures of either time employed or time actually working, while the first is a measure of time spent looking for work as well as time spent employed. Measures 2, 3, 4, 5, and 6, therefore, are more likely to reflect cross-sectional differences in the demand for as well as the supply of labor. (Since inability to find a job leads to labor force withdrawal in some cases, cross-sectional differences in the demand for labor are also likely to be reflected in the time-in-labor force measures!) In particular, if as is undoubtedly the case, the tightness of the market varies directly with skill level, low wage workers will be laid off more often and rehired less rapidly than high wage workers. Thus, the wage rate coefficients in these five measures will be positively biased.

On the other hand, the allocation of time between search for employment and actual employment is at least in part subject to the individual worker's control. Moreover, we expect the individual's decision to be

influenced by economic considerations. The larger the individual's non-employment income, the better able is he to afford to spend time looking for a satisfactory job. Similarly, the higher his potential wage rate, the better able is he to afford to spend time looking for a satisfactory job. But the higher his wage rate, the more costly is the time he spends not working. If the substitution effect dominates, the wage rate coefficient will be more positive in the time-employed than in the time-in-the-labor-force measures of labor supply. Thus, wage coefficients may be more positive in the time-employed labor supply measures either because the wage rate coefficients are more likely to inappropriately reflect cross-sectional differences in the demand for as well as the supply of labor or because these coefficients appropriately reflect the wage rate elasticity of job-search time. Because it is not possible to determine whether the differences between the time-employed and the time-in-the-labor-force measures are due to the first or second of these factors, we will present results for both of these measures.

The variables also differ in the degree to which they are comprehensive measures of labor supply. Our major focus in the discussion of the results will be on the most comprehensive measures of $HEMP_A$, HLF_A, HWK_{SW}, $HWK_{SW} \leq 40$. Only the HWK_{SW} variable measures overtime hours worked during the week. The $HWK_{SW} \leq 40$ variable is constructed in order to facilitate the isolation of the overtime labor supply schedule. Since $HWK_{SW} \leq 40$ treats overtime labor supply as equivalent to full-time labor supply, it is comparable to $HEMP_A$, the major differences being that (1) it contains a more continuous measure of hours worked during the week than $HEMP_A$ and, more important, (2) unlike $HEMP_A$, it may be sensitive to

seasonality problems.[7] The difference between the HWK_{SW} and $HWK_{SW} \leq 40$ coefficients can be attributed to the effects of overtime. There are at least three reasons for separating out the effects of overtime. First, doing so facilitates comparison with our annual-hours-employed measure. Second, the overtime labor supply of some groups is likely to be more responsive to economic incentives. This would be particularly true of prime age males, for example, who are expected to work full time but not necessarily overtime. Third, and closely related to the second point, our ultimate interest is in using these estimated labor supply schedules to predict the labor supply reductions which would be induced by a negative income tax program. Since reductions from overtime to full-time labor supply are almost certain to be more socially and politically acceptable than reductions from full-time to less than full-time labor supply, it is important to distinguish between these two kinds of labor supply responsiveness.

In addition to the labor supply measures, we also use two measures of schooling status as dependent variables. The first (SLW) indicates whether the individual was enrolled in school during the survey week. With regard to schooling last year, however, we only have information on why an individual worked less than 50 weeks. Thus for our schooling variable for last year (SLY), we assign a person a one if and only if he worked less than 50 weeks and gave school attendance as the explanation.

Since leisure for the young can be more closely identified with time not spent working or in school rather than just time not spent working, we also include results where the dependent variable is activity status. The first, activity status in the survey week (ACTLW) is a dummy variable

with a value of one if the individual was either employed or in school during the survey week. The second, activity status last year, (ACTLY), is defined in analogous fashion.

B. Unearned Income Measures

In order to derive an estimate of the effect of income on the labor supply of an individual, it is necessary to have a measure of the income that he has which does not depend on how much he works. Earnings of other family members and family nonemployment income (NEY) are two sources of income which do not depend directly on how much the individual works. Unfortunately, in many instances they depend indirectly on how much he works. We consider NEY first.

Reported NEY in the SEO includes family income from (1) Social Security (old age, survivor's, and disability insurance [OASDI]) or railroad retirement, (2) pensions from retirement programs for government employees or military personnel or private employees; (3) veteran's disability or compensation (VD); (4) public assistance, relief, or welfare from state or local governments (PA); (5) unemployment insurance; (6) workmen's compensation, illness, or accident benefits (WC); (7) other regular income such as payments from annuities, royalties, private welfare, or relief; contributions from persons not living in the household; and alimony or Armed Forces allotments; (8) interest; (9) dividends; and (10) rent. In addition, data are available on family assets.[8] Negative correlations between components of NEY and labor supply may be observed for one of three reasons: (1) NEY leads to reduced work effort, (2) involuntary limitations on work effort lead to NEY, or (3) some third factor simultaneously causes higher-than-average work effort. Only the first

should be considered for purposes of estimating a labor supply schedule. Correlations between public assistance, unemployment compensation, veteran's pensions, workmen's compensation, and retirement pensions on the one hand, and labor supply on the other hand, are likely to be observed for either the second or third reason.

Consider public assistance. A priori, it is impossible to specify whether public assistance beneficiaries work less in order to receive aid, or receive aid because of limitations in the work they can do. In the latter case, public assistance payments should not be included in NEY since causation runs the wrong way. But consider for a moment the implications of the former hypothesis. If beneficiaries work less in order to qualify for public assistance, nonbeneficiaries could supposedly do the same thing. That is, beneficiaries and nonbeneficiaries with the same potential wage rate face identical budget constraints.[9] To attribute their differences in work effort to differences in NEY is erroneous. The differences in this case must be a result of different tastes.[10] Consequently, whether the (promised) receipt of public assistance leads to reduced work effort or vice versa, public assistance payments should not be included in NEY.[11]

The same arguments apply to unemployment compensation (UC) beneficiareis. If one assumes that the receipt of UC depends upon involuntary cessation or reduction of work, clearly UC should not be included in the measure of NEY. This appears to be a reasonable assumption for at least the initial qualification for benefits. Even if one assumes that once unemployed, the availability of benefits induces less effort to become re-employed, the budget constraint of the short-term unemployed person is identical to that of a longer-term unemployed who has an identical wage

and lives in the same state. The difference in length of unemployment, therefore, must in this case be attributed to differences in tastes. Thus, UC benefits should not be included in NEY.[12]

Our treatment of workmen's compensation and veteran's disability and pensions program benefits is similar to that of public assistance and unemployment compensation benefits. We do not count WC or VD benefits as part of NEY. Most WC benefits are paid for total temporary disabilities. Because the benefits are paid for the length of the disability, the benefit amount will normally be inversely correlated with time spent working. The inclusion of WC benefits in NEY would lead to a spurious negative correlation in the NEY coefficient. Veteran's disability payments like WC payments are likely to be the best available proxy for the severity of a health limitation on work effort, while the veterans pension program is an income-tested program, which for our purposes is similar to the public assistance program. Thus, payments from either of these programs should not be counted in NEY.

To summarize, we do not include benefits from public assistance, unemployment compensation, workmen's compensation or the veteran's programs in our measure of NEY. Our first NEY variable is then the sum of the remaining elements of reported NEY in the SEO, or the sum of interest, dividends, rent, pensions, Social Security payments, and a miscellaneous category called other nonemployment income. In practice, most of the NEY is attributable to interest, dividends, and rent. Since scholarship income is related to school attendance and thus to labor supply, we use a second variable, NEY2, in all cases except where the analysis is limited to those out of school. NEY2 is the same as NEY1 except that the miscellaneous category of NEY (including scholarships) is now excluded.

As indicated at the start of this discussion, however, the SEO reports NEY only for families and not for individuals. Especially for young people who are living with their parents, little if any of the NEY may actually be under the control of the young person whom we are considering. While this difficulty will bias our income estimates toward zero, there are other biases working in the opposite direction which we shall discuss in section IV.

In addition, to using NEY, we can also use information on earnings of other family members to generate income-effect estimates. In particular, husband's earnings can be used to generate income estimates for wives and the family head's income can be used for young single people living with their parents.[13] Unfortunately, however, in many cases the earnings of other family members will also depend indirectly on the labor supply of the individual (e.g., a wife may work to put her husband through school).

C. Wage Rate Measures

The hourly wage rate in the SEO is constructed by dividing normal weekly earnings by actual hours worked during the survey week. In addition to being a before tax measure, there are two major problems with this wage rate variable. First, it is missing for all individuals who did not work for wages during the survey week. Thus for demographic groups in which many members do not work, e.g., students or wives, there is no measure of the actual hourly wage for large portions of the sample. Even for groups like married men where almost everyone works, however, dividing normal earnings by actual hours worked may create serious measurement errors in the wage rate variable.[14] The hourly wage rate is too low for all individuals who worked more hours than their normal work week and too high for all individuals who worked fewer hours than their normal work

week. This kind of measurement error will normally bias the wage rate coefficient toward zero.[15]

A solution to both the missing wage rate and the measurement errors in wage rate problems is to use a two-stage least squares regression procedure. In a first stage, wage rates are regressed on a host of demographic variables such as education, race, health, age, and location. The coefficients of the independent variables are used to impute potential wage rates to individuals on the basis of their demographic characteristics. In the second stage labor supply regression, the imputed wage rate is used as the independent wage rate variable. The coefficient of the imputed wage rate variable may be unbiased if the variables used to derive the imputed wage rate have no direct effect on the labor supply.

Unfortunately, the variables used to impute the wage rate are likely to have direct effects on labor supply. A brief examination of some of the variables used to estimate the imputed wage rate will make this clear. The first stage equation is as follows:

WR = WR (Age, Education, Race, Health Status, Current Location, Dummy for Foreign Location at Age Sixteen, Dummy for Union Membership.)

Health undoubtedly affects an individual's supply of labor independent of his wage rate. Age may be a good proxy for tastes and may also reflect demand factors. The demand for labor varies by race. Being blacks leads to both lower wages and lower availability of work. Education not only increases an individual's productivity but it may also change his tastes and affect the nonpecuniary aspects of jobs which an individual can get. It does not seem unreasonable to assume that those with more education are most likely to have been socialized into a greater desire to work

and that the more education an individual has completed may be the best proxy that we have for his ambition. That is, it is reasonable to assume that, on the average, individuals who drop out of school earlier than average will not only be less bright than average but less ambitious as well.

All of the variables discussed above, with the possible exception of age, have either positive direct effects on both the wage rate and labor supply or negative direct effects on both variables. Consequently, if they are excluded from the labor supply equation, the imputed wage variable will be biased upwards. On the other hand, if all the variables are included in the labor supply regression, there will be no independent variation in wage rates. Unfortunately, the attempt to use a potential wage variable inevitably leads to this "damned if you do and damned if you don't" bind. Since for many young people we have no data on actual wages rates, we are forced to use the potential wage. While we do include variable for health, race, and age in our labor supply equations we do not use variables for education or the other determinants of the potential wage.

D. Functional Form

We present results only from regressions in which we used linear nonemployment income and other (or husband's) earnings variables, and log linear reported wage rate and potential wage rate variables. There were two reasons for these choices. First, these functional forms generally provided the best fit. Second, the linear and log linear wage rate coefficients are the easiest ones to convert into crude estimates of percentage reductions in labor supply which would result from NIT programs with specified guarantees and tax rates.[16]

E. Other Independent Variables

In addition to the income and wage rate variables, our SEO regressions for young people include the following independent variables:

(1) HPRELY = a dummy variable which is equal to one if health prevented the individual from working entirely the previous year.

(2) HLIMLY = a dummy variable equal to one if health prevented the individual from working part of the previous year.

(3) HPRE = a dummy variable equal to one if the individual has a long term health disability which prevents him from working.

(4) HLIMA = a dummy variable equal to one if the individual has a long term disability which limits the amount of work he can do.

(5) HLIMK = a dummy variable equal to one if the individual has a long term health disability which limits the kind of work he can do.

(6) HLIMKA = a dummy variable equal to one if the individual has a long term health disability which limits the kind and amount of work he can do.

(7) BLACK = a dummy variable which is equal to one if the individual's race is Negro.

(8) OTHRAC = a dummy variable which is equal to one if the individual's race is neither Caucasian nor Negro.

(9) FAMSIZ = a set of dummy variables for family sizes of two, three, four, five, six, seven, or more.

(10) AGE = a set of dummies for ages 21, 22, 23, and 24.

(11) NTWTH = family's total assets which bear no monetary return.

The health status variables overlap to some extent. The HPRELY, HPRE, HLIMA, HLIMK, and HLIMKA variables are designed to measure long term disabilities. The HLIMLY variable in contrast may reflect a long term disability but it is more likely to reflect the effect of an episodic

illness on labor supply the previous year. Unfortunately, there is no question in the SEO which can capture the influence of such an episodic illness on labor supply during the survey week.

The larger a family, the more income the family requires to maintain a given per capita standard of living. Assuming that tastes for standards of living do not vary with family size then, ceteris paribus, the larger the family, the more an individual should work. This is the rationale for the inclusion of a set of family size dummies.

The two racial variables are included to reflect any effects of discrimination on the demand side of the market, while the age dummies may reflect differences in labor demand or differences in tastes for work vis-a-vis schooling or leisure.

Finally, while the NTWTH variable may be viewed as an alternative measure of the income effect on labor supply, for reasons discussed in footnote 4, the NTWTH coefficient is almost certain to be positively biased.

F. Samples

A few groups of individuals were excluded from each of the demographic groups that we analyzed. For example, we excluded individuals serving in the Armed Forces either in the week previous to the SEO survey or during the previous year. The SEO measure of time employed consists of time employed as a civilian. In addition, most male members of the Armed Forces are serving involuntarily while our interest is in voluntary labor supply. Next we excluded individuals who reported that they did not work at all during the previous year due to institutionalization because, by

definition, the labor supply of individuals who cannot work will be invariant with differences in wage rates and nonemployment income. We excluded the self-employed because it is impossible to separate the returns to labor from the returns to capital for the self-employed. As a result, their wage rates and nonemployment income are likely to be mismeasured, and the wage rate and labor supply coefficients are likely to be biased.

For single people, we excluded those not living with their parents, mainly because these people would have very little NEY or other earnings from which income-effect estimates could be generated. As a result we excluded about fifteen percent of the single males and thirty percent of the single females. For married men and women we excluded those living with their parents since NEY and other earnings would have very different meanings for such individuals and since there are very few people in this situation (e.g., only 14 males). We also excluded wives with children greater than five, partly to facilitate comparisons with older wives and partly because the few wives who have had children at a very early age may have atypical tastes for homework versus market work. We also excluded wives whose health prevented them from working since we believe they would have little incentive to misrepresent their health status. As a result of those exclusions 60 wives were eliminated from our sample.

III. A PRIORI EXPECTATIONS

Because time spent in school is a societally approved alternative to time spent in market work, there is less social pressure for young

men than for prime age men to work. Even young men not in school, particularly single young men, are apt to encounter less social pressure to work than prime age men because our society tends to be more tolerant of deviant behavior among young males than among prime age males. As a consequence of there being less social pressure on young males than on prime age males to work, economic factors should play a larger role in the decision by young men of how much to work. Thus we expect larger income and substitution elasticities for all young males taken together than for prime age males.

Since young females are probably under somewhat less pressure to work than young males, we expect slightly larger income elasticities for young single females than for single males (at least once we standardize for school status). On the other hand, the income elasticity for young single females may be lower than for older single females since young singles may be very oriented toward saving up a nest egg before marrying and having children.

We expect married males not in school to have very small income and substitution effects because they face nearly as much social pressure to work as prime married males. Due to the fact that they are subjected to much less social pressure to work than either young married males or prime age single males, young single males not in school should have larger income and substitution effects than both groups.[17] For two reasons we expect the income and substitution elasticities of labor supply to be about equal for married and single men in school and the income elasticity of both groups to be larger than those for young men not in school. First, there is little or no social pressure for married or single students to work. Thus if there is sufficient other income, young

males in school will work little or not at all. Second, and closely related, to the extent that capital markets are imperfect, a student without sufficient income to finance his education and living expenses must work. While the absence of social pressure to work suggests a larger substitution elasticity for those in school, the need for students to devote their time to studying suggests that the substitution effect may not be large. On balance, therefore, it is difficult to predict the relative magnitude of the substitution effects for those in and out of school.

Finally, we expect income to have a positive effect on schooling because of (1) imperfections in the capital market and (2) the consumption value of schooling. With regard to the effect of wage rate changes (holding income constant), a higher wage will increase the opportunity cost of schooling but it may also increase the future economic benefits of schooling (assuming positive relations between the initial wage rate, innate ability, and ability to profit from schooling). Thus there may or may not be any substitution effect on schooling.

IV. BIASES

There are likely to be serious biases in both our wage rate and income coefficients, particularly in regressions which do not control for school status. When school status is not controlled for the wage rate coefficients are likely to have a negative bias because on the one hand holding age constant, an individual still attending school is likely to have completed more years of school than a nonattender and therefore will have a higher potential wage rate. But because he is

in school, he will also be working less. Thus there is a near mechanical negative relationship built into the wage rate coefficient when school status is not controlled for. For the same reason there will be a positive bias in the wage rate coefficient when schooling status is the dependent variable.

Among young people in school there will be a spurious negative relationship between the potential wage and hours worked. Individuals who work their way through school will normally take longer to complete their education. Consequently, for a given age they will have completed less years of school and will therefore be assigned a lower potential wage. (Among those in school who work, wage rates will still vary positively with years of schooling completed.) Thus the spurious negative relationship between labor supply and the potential wage rate.

Finally, the wage rate coefficients for those not in school are likely to be positively biased because they are likely to reflect demand as well as supply factors and because of the correlation of wages with ambition (i.e., for work or income). The first of these biases is likely to be more severe for the young because they are subject to higher unemployment rates with greater absolute differentials by educational levels. Moreover, this bias is even likely to be present in our annual hours in the labor force regressions because young people, particularly single young people, may be more likely than those of prime ages to drop out of the labor force when they become discouraged in their job search efforts. Similarly differences in wage rates are likely to reflect differences in ambition among young people. Again, particularly for single people this

bias should be more severe among the young because the lower social and economic pressures to work allow differences in ambition to have more effect on labor supply.

Both of our estimates of the effect of income on schooling are likely to be negatively biased. Because at least part of NEY represents inherited wealth, class differences in tastes for schooling will almost certainly be more closely associated with NEY than the earnings of a young married males' spouse and may also be more closely associated with NEY than with the earnings of a young single male's parents. Thus this taste bias in the effect of income on school attendance will probably be more pronounced for NEY but it will also exist for OTHERN. In addition, NEY may also represent direct effects of wealth as well as income. (Except when we limit the analysis to those out of school, we have eliminated the miscellaneous category from NEY to avoid attributing a spurious labor supply effect to scholarship income.)

On the other hand, for young married men the OTHERN coefficients will be negatively biased because how much the spouse works and earns depends at least in part on whether or not she must help finance her husband's education. Similar arguments may also apply to a lesser extent to the results for head's earnings for single people.

V. INCOME EFFECT ESTIMATES FOR YOUNG MALES AND SINGLE WOMEN

The NEY and OTHERN (or head's earnings, HE, for single people since mothers may work to help put children through school) coefficients from several regressions are presented in Table 2. The first six rows of the

TABLE 2

SEO Young Males, Income Coefficients for Labor Supply
(not Controlling for School Status)
School Status, and Activity Status

	Married Males				Single Males				Single Females			
	OE		NEY		HE		NEY		HE		NEY	
HLF_A	-.0413	(5.7)	-.1506	(?.2)	-.0258	(5.4)	-.0335	(2.1)	-.0115	(1.8)	-.0125	(1.1)
$HEMP_A$	-.0342	(4.2)	-.1120	(1.5)	-.0247	(5.3)	-.0339	(2.2)	-.0113	(1.8)	-.0233	(2.1)
$EMPDUM_A$	$-.47\cdot10^{-5}$	(2.3)	$-.53\cdot10^{-5}$	(0.3)	$-.16\cdot10^{-5}$	(0.8)	$-2.35\cdot10^{-5}$	(3.5)	$.056\cdot10^{-5}$	(0.2)	$.068\cdot10^{-5}$	(0.2)
HWK_{SW}	-.00059	(2.0)	+.00047	(0.2)	-.000468	(3.3)	-.000492	(1.0)	-.000270	(1.5)	-.000734	(2.3)
$HWK_{SW} \leq 40$	-.00038	(1.6)	-.00038	(0.2)	-.000378	(3.3)	-.000535	(1.4)	-.000335	(2.3)	-.000645	(2.5)
$WKDUM_{SW}$	$-.96\cdot10^{-5}$	(1.8)	$-2.34\cdot10^{-5}$	(0.5)	$-.79\cdot10^{-5}$	(2.5)	$-1.23\cdot10^{-5}$	(1.1)	$-.89\cdot10^{-5}$	(2.3)	$-1.67\cdot10^{-5}$	(2.5)
SLY	$2.16\cdot10^{-5}$	(4.1)	$10.84\cdot10^{-5}$	(2.1)	$1.32\cdot10^{-5}$	(4.5)	$2.14\cdot10^{-5}$	(2.2)	$1.04\cdot10^{-5}$	(2.8)	$1.00\cdot10^{-5}$	(1.5)
SLW	$2.72\cdot10^{-5}$	(4.5)	$2.37\cdot10^{-5}$	(0.4)	$1.68\cdot10^{-5}$	(5.1)	$.22\cdot10^{-5}$	(0.2)	$1.14\cdot10^{-5}$	(3.1)	$.62\cdot10^{-5}$	(0.9)
ACTLY	a l l a c t i v e				$.09\cdot10^{-5}$	(1.2)	$.01\cdot10^{-5}$	(0.0)	$.15\cdot10^{-5}$	(1.0)	$.15\cdot10^{-5}$	(0.5)
ACTLW	$.74\cdot10^{-5}$	(1.8)	$4.16\cdot10^{-4}$	(1.1)	$.65\cdot10^{-5}$	(3.1)	$-1.35\cdot10^{-5}$	(1.9)	$.20\cdot10^{-5}$	(0.7)	$-.94\cdot10^{-5}$	(1.8)

table present the coefficients from regressions, where the six alternative measures of labor supply, HLF_A, $HEMP_A$, $EMPDUM_A$, $HWK_{SW} \leq 40$, HWK_{SW} and $WKDUM_{SW}$ are the dependent variables. In these regressions, school status was not used as an independent variable. The next four rows present the coefficients from regressions where school status last year (SLY) school status last week (SLW), activity status (working or schooling vis-a-vis, neither) during the previous year (ACTLY) and during the survey week (ACTLW) are the dependent variables. In Table 3 the corresponding income elasticities are presented and where relevant those of prime age males are also presented.

Almost all of the income coefficients from the labor supply equations have the expected negative sign. While many of the OTHERN (or HE) coefficients are highly significant, most of the NEY coefficients have large standard errors and are therefore only marginally significant or statistically insignificant even though the absolute values of the coefficients are generally greater for NEY than for OTHERN (or HE). Although both the OTHERN and NEY coefficients for the married men are larger than the corresponding coefficients for the single men, the relative magnitude of the coefficients is somewhat misleading. The single young people work less than young married men and since they live with their parents they also have more income. Thus, as depicted in Table 3, the income elasticities of labor supply for young single males are often larger than the income elasticities for young married males.

On the other hand, the income elasticities are relatively low for single females. As we shall see later, these differences by sex are considerably reduced once we standardize for school attendance. Thus the

TABLE 3

SEO Young Male Income Elasticities
(not Controlling for School Status)
Compared to Prime Age Male Elasticities

	Married Males			Single Males			Single Females		
	20-24		25-54	20-24		25-54	20-24		25-54
	OE	NEY	NEY	HE	NEY	NEY	HE	NEY	NEY
HLF_A	-.15	-.54	-.06	-.31	-.40	-.12	-.12	-.13	-.44
$HEMP_A$	-.13	-.41	-.05	-.32	-.36	-.07	-.12	-.23	-.40
$EMPDUM_A$	-.03	-.04	-.04	-.01	-.33	-.02	+.01	+.01	-.29
HWK_{SW}	-.10	+.08	+.05	-.29	-.31	+.10	-.14	-.38	-.51
$HWK_{SW} \leq 40$	-.07	-.07	-.00	-.27	-.38	-.08	-.19	-.36	-.69
$WKDUM_{SW}$	-.07	-.17	-.01	-.19	-.29	-.12	-.18	-.33	-.46
SLY	1.28	6.42	NA	.30	.48	NA	.33	.32	NA
SLW	1.30	1.14	NA	.41	.05	NA	.42	.23	NA
ACTLY	NA	NA	NA	+.01	.00	NA	+.02	+.02	NA
ACTLW	+.05	+.29	NA	+.09	-.19	NA	+.02	-.14	NA

greater school enrollment among young men appears to be the main factor responsible for the sex differential.

In comparing the results for young people with our earlier results for the prime age groups, our expectations are generally confirmed. The labor supply of young males is far more elastic than that of prime age males. For females, however, the reverse is true. In this case social pressures may not be too great for any age group and young single females may be eager to accumulate a nest egg before marriage.

A large part of the negative income effects on labor supply for young people should be attributable to the positive income effect on school attendance. The coefficients and elasticities in the seventh and eighth rows of Tables 2 and 3 support this hypothesis. All of the coefficients are positive. Again while the OTHERN (and HE) coefficients all have very small standard errors, the standard errors of the NEY coefficients are much larger.

Note that in contrast to the labor supply income elasticities, the school attendance elasticities for married men are much larger than those for single men or women. (A much smaller percentage of married men than single men or women attend school--as indicated in Table 1.) There are, however, reasons to believe that the married OTHERN and NEY coefficients are more seriously biased in a negative direction than the single coefficients. As argued above, the married OTHERN coefficients will be biased because the wife's decision of how much to work is dependent on whether or not her husband decides to go to school. The NEY coefficient is also likely to be seriously biased because it represents a wealth and a taste effect as well as an income effect. In contrast much less of the NEY for

single men or women is likely to represent inherited wealth because it is dominated by parent's "EY.

While the income elasticity of labor supply among young males is greater than that among prime age males, it is not necessarily the case that the demand for leisure is more elastic since time spent in school is not leisure. The coefficients reported in rows nine and ten in Table 2 are derived from regressions where activity status is the dependent variable. If the individual is either in school or at work during the year (ACTLY) or the survey week (ACTLW) he is considered to be active. Only a few of the coefficients are negative. (During the year, all married men were either in school or at work at one time or another.) The positive coefficients, probably reflect differences in the demand for different skill classes of labor. Young people from very low-income families are not only less likely to be in school but more important, of all those not in school they are most likely to have difficulty in finding a job. In any case, these results do suggest that while the income elasticity of labor supply of young males is high, the income elasticity of their demand for leisure is low and perhaps even positive.

Since a large part of the negative income effect on labor supply is attributable to the positive income effect on schooling it is useful to examine the magnitude of the negative income effect apart from the schooling status effect and to examine the income effect for students and nonstudents. In Table 4, therefore, we present in the first six rows the income coefficients from labor supply regressions which contain

TABLE 4

SEO Income Coefficients for Labor Supply
With and Without Controlling for School Status

	Married Males				Single Males				Single Females			
	OE		NEY		HE		NEY		HE		NEY	
	With Standardizing											
HLF_A	-.0166	(4.2)	-.0268	(0.7)	-.0089	(2.9)	-.0061	(0.6)	.0008	(0.2)	-.0007	(0.1)
$HEMP_A$	-.0100	(1.8)	-.0017	(0.0)	-.0093	(2.9)	-.0089	(0.8)	-.0002	(0.0)	-.0125	(1.5)
$EMPDUM_A$	$-.20\cdot10^{-5}$	(1.0)	$.83\cdot10^{-5}$	(0.4)	$.01\cdot10^{-5}$	(0.0)	$-2.07\cdot10^{-5}$	(3.2)	$.18\cdot10^{-5}$	(0.7)	$.19\cdot10^{-5}$	(0.4)
HWK_{SW}	-.00006	(0.2)	.00094	(0.4)	-.00010	(0.7)	-.00044	(1.0)	-.00004	(0.2)	-.00061	(2.2)
$HWK_{SW} \leq 40$	.00005	(0.2)	-.00001	(0.0)	-.00005	(0.5)	-.00049	(1.5)	-.00010	(0.8)	-.00052	(2.4)
$WKDUM_{SW}$	$-.23\cdot10^{-5}$	(0.4)	$-1.70\cdot10^{-5}$	(0.3)	$-.06\cdot10^{-5}$	(0.2)	$-1.12\cdot10^{-5}$	(1.2)	$-.44\cdot10^{-5}$	(1.2)	$-1.43\cdot10^{-5}$	(2.3)
	Without Standardizing											
HLF_A	-.0413	(5.7)	-.1506	(2.2)	-.0258	(5.4)	-.0335	(2.1)	-.0115	(1.8)	-.0125	(1.1)
$HEMP_A$	-.0342	(4.2)	-.1120	(1.5)	-.0247	(5.3)	-.0339	(2.2)	-.0113	(1.8)	-.0233	(2.1)
$EMPDUM_A$	$-.47\cdot10^{-5}$	(2.3)	$-.53\cdot10^{-5}$	(0.3)	$-.16\cdot10^{-5}$	(0.8)	$-2.35\cdot10^{-5}$	(3.5)	$.056\cdot10^{-5}$	(0.2)	$.068\cdot10^{-5}$	(0.2)
HWK_{SW}	-.00059	(2.0)	+.00047	(0.2)	-.000468	(3.3)	-.000492	(1.0)	-.000270	(1.5)	-.000734	(2.3)
$HWK_{SW} \leq 40$	-.00038	(1.6)	-.00038	(0.2)	-.000378	(3.3)	-.000535	(1.4)	-.000335	(2.3)	-.000645	(2.5)
$WKDUM_{SW}$	$-.96\cdot10^{-5}$	(1.8)	$-2.34\cdot10^{-5}$	(0.5)	$-.79\cdot10^{-5}$	(2.5)	$-1.23\cdot10^{-5}$	(1.1)	$-.89\cdot10^{-5}$	(2.3)	$-1.67\cdot10^{-5}$	(2.5)

a schooling status independent variable and compare these with the analogous coefficients from Table 2.[18] When school status is held constant, the coefficients in the first six rows indicate that income effects are still generally negative. But the absolute value of the coefficients is generally much smaller and only a few of the coefficients are significantly different from zero at the .95 level.

As we indicated earlier, we expect larger income elasticities for those in school than those out of school. Regression coefficients for those in and out of school are presented in Table 5 and the corresponding elasticities in Table 6.[19]

As predicted, the income elasticities for young people are generally much greater for those in school than for those out of school, especially for the estimates based on NEY and continuous measures of labor supply. For those out of school, the estimates for both young and prime age males are generally very small. While we had expected somewhat larger income elasticities for the young men out of school, their income coefficients may have a downward bias since differences in demand for different skill classes of labor may be reflected in the coefficients. If so, the large positive estimates for married males based on the survey week measures of labor supply may reflect a particularly strong case of this bias.

For young single females out of school, the income elasticity estimates are considerably smaller than for prime age single females. While we did not expect as large a difference between the two age groups, we did expect somewhat smaller elasticities for the younger group since they may be quite oriented toward saving up a nest egg before marrying and having children.

TABLE 5

Income Coefficients--By School Status

	Married Males				Single Males				Single Females			
	OE		NEY		HE		NEY		HE		NEY	
	In School*											
HLF_A	-.0238	(3.2)	-.0727	(1.3)	.0068	(1.0)	-.0096	(0.9)	-.0012	(0.1)	-.0061	(0.3)
$HEMP_A$	-.0332	(3.1)	-.0688	(0.9)	.0112	(1.5)	-.0088	(0.7)	-.0043	(0.5)	-.0047	(0.2)
$EMPDUM_A$	$-.80 \cdot 10^{-5}$	(2.1)	$2.87 \cdot 10^{-5}$	(1.0)	$.03 \cdot 10^{-5}$	(0.1)	$-2.60 \cdot 10^{-5}$	(3.5)	$-.33 \cdot 10^{-5}$	(0.7)	$.35 \cdot 10^{-5}$	(0.3)
HWK_{SW}	-.00019	(0.4)	-.00370	(0.9)	-.00014	(0.6)	-.00005	(0.1)	-.00033	(1.1)	-.00079	(1.2)
$HWK_{SW} \leq 40$	-.00043	(1.1)	-.00380	(1.2)	-.00027	(1.4)	-.00011	(0.3)	-.00027	(1.2)	-.00038	(0.8)
$WKDUM_{SW}$	$-.91 \cdot 10^{-5}$	(0.9)	$-13.65 \cdot 10^{-5}$	(1.7)	$-.66 \cdot 10^{-5}$	(1.2)	$-.11 \cdot 10^{-5}$	(0.1)	$-.88 \cdot 10^{-5}$	(1.4)	$-1.50 \cdot 10^{-5}$	(1.0)
	Out of School											
HLF_A	-.0036	(0.7)	-.0280	(0.7)	-.0120	(1.8)	-.0065	(0.3)	.0044	(0.8)	-.0044	(0.5)
$HEMP_A$	.0075	(1.0)	-.0094	(0.2)	-.0168	(2.4)	-.0251	(1.1)	.0051	(0.8)	-.0190	(2.1)
$EMPDUM_A$	$.14 \cdot 10^{-5}$	(0.5)	$-.58 \cdot 10^{-5}$	(0.3)	$.07 \cdot 10^{-5}$	(0.2)	$-.18 \cdot 10^{-5}$	(0.1)	$.13 \cdot 10^{-5}$	(0.4)	$-.14 \cdot 10^{-5}$	(0.3)
HWK_{SW}	.00017	(0.5)	.00480	(1.8)	.00004	(0.2)	-.00020	(0.3)	.00016	(0.8)	-.00056	(1.9)
$HWK_{SW} \leq 40$	.00037	(1.3)	.00382	(1.9)	.00016	(1.0)	-.00032	(0.7)	.00007	(0.5)	-.00054	(2.4)
$WKDUM_{SW}$	$.49 \cdot 10^{-5}$	(0.7)	$7.86 \cdot 10^{-5}$	(1.6)	$.47 \cdot 10^{-5}$	(1.0)	$-.92 \cdot 10^{-5}$	(0.7)	$.07 \cdot 10^{-5}$	(0.2)	$-1.44 \cdot 10^{-5}$	(2.2)

*While separate NEY variables were run for those in school (excluding miscellaneous NEY) and those out of school (including miscellaneous NEY), the OE coefficients for those in school are actually results for the interaction between OE and being in school.

TABLE 6

Income Elasticities by School Status

	Ages 20-24				Ages 25-54
	In School		Not in School		Not in School
	OE	NEY	OE*	NEY	NEY
	Married Male				
HLF_A	-.19	-.51	-.01	-.09	-.06
$HEMP_A$	-.19	-.50	+.03	-.03	-.05
$EMPDUM_A$	-.05	+.20	+.01	-.04	-.04
HWK_{SW}	-.01	-1.11	+.03	+.78	+.05
$HWK_{SW} \leq 40$	-.02	-1.18	+.07	+.71	-.00
$WKDUM_{SW}$	-.04	-1.31	+.04	+.56	-.01
	Single Male				
HLF_A	-.15	-.29	-.09	-.05	-.12
$HEMP_A$	-.17	-.26	-.13	-.20	-.07
$EMPDUM_A$	+.16	-.42	+.01	-.02	-.02
HWK_{SW}	-.15	-.08	+.01	-.07	.10
$HWK_{SW} \leq 40$	-.19	-.19	+.06	-.13	-.08
$WKDUM_{SW}$	-.03	-.02	+.07	-.14	-.12
	Single Females				
HLF_A	+.08	-.15	+.03	-.03	-.07
$HEMP_A$	+.02	-.12	+.04	-.15	-.38
$EMPDUM_A$	+.07	+.05	+.02	-.02	-.33
HWK_{SW}	-.26	-1.20	+.06	-.21	-.61
$HWK_{SW} \leq 40$	-.38	-.73	+.03	-.22	-.50
$WKDUM_{SW}$	-.31	-.56	+.01	-.22	-.45

*HE for single males and females.

To summarize the results presented thus far, the labor supply of young males is more income elastic than that of prime age males because time spent in school is very income elastic. That is, both the decisions of whether or not to attend school and, once in school, of how much time to devote to study vis-a-vis market work are very income elastic. But for those not in school, the labor supply appears quite income inelastic. The income elasticity estimates for young single females are generally a little lower than for young single men and much lower than for prime age single females.

Finally let us look at some results for low-wage subsamples of the total population. For married males we restricted the sample to men with a potential wage of less than three dollars per hour. For single men and women we used a similar cutoff except applied to the family head rather than to the young person himself. Regression results for both the low-wage and total samples are presented in Table 7.

For married males the other earnings coefficients are generally about the same in the low-wage sample as in the total sample, but the NEY coefficients differ greatly. In the labor supply equations they shift from strongly negative in the total sample to moderately positive in the low-wage sample while in the school equation the reverse shift occurs. These results suggest that, while in the total sample the NEY variable is also picking up taste and/or wealth effects to a major extent, in the low-wage sample (where there is much less NEY) greater labor supply leads to more income, more assets, and thus more NEY.

For single males there are no major differences in the results for the two samples. For single females, however, there are some puzzling differences. Specifically, there is a stronger (positive) relation between

TABLE 7

Results for Low Wage Subsamples
(No School Standardization)

	Low Wage				Total			
	OE		NEY		OE		NEY	
	Married Males							
HLF_A	-.0452	(3.8)	.0486	(0.3)	-.0413	(5.7)	-.1506	(2.2)
$HEMP_A$	-.0447	(3.3)	.0558	(0.3)	-.0342	(4.2)	-.1120	(1.5)
$EMPDUM_A$	$-.62\cdot10^{-5}$	(1.5)	$.12\cdot10^{-5}$	(0.0)	$-.47\cdot10^{-5}$	(2.3)	$-.53\cdot10^{-5}$	(0.3)
HWK_{SW}	-.00079	(1.6)	.00360	(0.6)	-.00059	(2.0)	.00047	(0.2)
$HWK_{SW} \leq 40$	-.00067	(2.0)	.00128	(0.3)	-.00038	(1.6)	-.00038	(0.2)
$WKDUM_{SW}$	$-1.37\cdot10^{-5}$	(1.8)	$3.91\cdot10^{-5}$	(0.4)	$-.96\cdot10^{-5}$	(1.8)	$-2.34\cdot10^{-5}$	(0.5)
SLY	$2.28\cdot10^{-5}$	(2.4)	$-5.74\cdot10^{-5}$	(0.5)	$2.16\cdot10^{-5}$	(1.8)	$10.84\cdot10^{-5}$	(2.1)
SLW	$2.93\cdot10^{-5}$	(3.6)	$-1.09\cdot10^{-5}$	(0.1)	$2.72\cdot10^{-5}$	(4.5)	$2.37\cdot10^{-5}$	(0.4)
ACTLY	all active				all active			
ACTLW	$-.42\cdot10^{-5}$	(0.8)	$-2.28\cdot10^{-5}$	(0.4)	$.74\cdot10^{-5}$	(1.8)	$4.16\cdot10^{-4}$	(1.1)
	HE		NEY		HE		NEY	
	Single Males							
HLF_A	-.0231	(3.3)	-.0340	(1.4)	-.0258	(5.4)	-.0335	(2.1)
$HEMP_A$	.0239	(3.4)	-.0259	(1.1)	-.0247	(5.3)	-.0339	(2.2)
$EMPDUM_A$	$-.09\cdot10^{-5}$	(0.3)	$-2.68\cdot10^{-5}$	(2.6)	$-.16\cdot10^{-5}$	(0.8)	$-2.35\cdot10^{-5}$	(3.5)
HWK_{SW}	-.00042	(2.0)	-.00046	(0.6)	-.00047	(3.3)	-.00049	(1.0)
$HWK_{SW} \leq 40$	-.00032	(1.9)	-.00036	(0.6)	-.00038	(3.3)	-.00054	(1.4)
$WKDUM_{SW}$	$-.44\cdot10^{-5}$	(1.0)	$-.46\cdot10^{-5}$	(0.3)	$-.79\cdot10^{-5}$	(2.5)	$-1.23\cdot10^{-5}$	(1.1)
SLY	$1.19\cdot10^{-5}$	(2.8)	$2.25\cdot10^{-5}$	(1.6)	$1.32\cdot10^{-5}$	(4.5)	$2.14\cdot10^{-5}$	(2.2)
SLW	$1.52\cdot10^{-5}$	(3.4)	$.43\cdot10^{-5}$	(0.3)	$1.68\cdot10^{-5}$	(5.1)	$.22\cdot10^{-5}$	(0.2)
ACTLY	$.05\cdot10^{-5}$	(0.5)	$.14\cdot10^{-5}$	(0.4)	$.09\cdot10^{-5}$	(1.2)	$.01\cdot10^{-5}$	(0.0)
ACTLW	$.39\cdot10^{-5}$	(1.3)	$-.81\cdot10^{-5}$	(0.8)	$.65\cdot10^{-5}$	(3.1)	$-1.35\cdot10^{-5}$	(1.9)
	HE		NEY		HE		NEY	
	Single Females							
HLF_A	.0249	(1.1)	-.0483	(1.5)	-.0115	(1.8)	-.0125	(1.1)
$HEMP_A$	.0243	(1.1)	-.0399	(1.3)	-.0113	(1.8)	-.0233	(2.1)
$EMPDUM_A$	$2.62\cdot10^{-5}$	(2.6)	$.87\cdot10^{-5}$	(0.6)	$.06\cdot10^{-5}$	(0.2)	$.068\cdot10^{-5}$	(0.2)
HWK_{SW}	-.00001	(0.0)	-.00070	(0.7)	-.00027	(1.5)	-.00073	(2.3)
$HWK_{SW} \leq 40$	.00027	(0.5)	-.00045	(0.6)	-.00034	(2.3)	-.00065	(2.5)
$WKDUM_{SW}$	$1.43\cdot10^{-5}$	(1.0)	$-1.34\cdot10^{-5}$	(0.7)	$-.89\cdot10^{-5}$	(2.3)	$-1.67\cdot10^{-5}$	(2.5)
SLY	$-.42\cdot10^{-5}$	(0.3)	$3.40\cdot10^{-5}$	(1.9)	$1.04\cdot10^{-5}$	(2.8)	$1.00\cdot10^{-5}$	(1.5)
SLW	$-.83\cdot10^{-5}$	(0.6)	$1.95\cdot10^{-5}$	(1.1)	$1.14\cdot10^{-5}$	(3.1)	$.62\cdot10^{-5}$	(0.9)
ACTLY	$1.16\cdot10^{-5}$	(1.5)	$1.13\cdot10^{-5}$	(1.1)	$.15\cdot10^{-5}$	(1.0)	$.15\cdot10^{-5}$	(0.5)
ACTLW	$.29\cdot10^{-5}$	(0.2)	$.54\cdot10^{-5}$	(0.3)	$.20\cdot10^{-5}$	(0.7)	$-.94\cdot10^{-5}$	(1.8)

NEY and schooling in the low wage sample but a negative relation between heads earnings and school status.

Income Effect Estimates for Young Married Women

For married women, 20-24, we shall focus our greatest attention on results disaggregated by the presence of children since the presence of young children has a great impact on both the average level of wives labor supply and on our elasticity estimates.[20] We begin, however, with an analysis of the total sample since the decision to have children, and especially the timing of children, may be determined in part by economic factors. Consequently we expect stronger income (and substitution) labor supply elasticities when we do not control for presence of children.

The biases for young wives should be similar to those for older wives. For the income estimates these include (1) the possibility of a cross-substitution effect when we use husband's earnings and (2) the relation of NEY to wealth and class differences in tastes on the one hand and to the wife's earnings on the other.

Regression coefficients are presented in Table 8. Since very few wives are in school, we present results only for the total sample (not controlling for school status) and for those not in school. Elasticity estimates are presented later along with the comparable figures for wives with and without young children.

The results in Table 8 indicate that there is generally a significant negative relation between husband's earnings and the wife's labor supply. As expected, this relationship is considerably stronger if we do not standardize for the presence of children. On the other hand, the NEY coefficients are nearly always positive (though statistically insignificant) probably because of the effect of the wive's labor supply on family

TABLE 8

SEO Income Coefficients for Wives 20-24

	Total							
	Kids Control				No Kids Control			
	HE		NEY		HE		NEY	
HLF_A	-.0362	(2.8)	+.0280	(0.2)	-.0534	(3.6)	+.0701	(0.4)
$HEMP_A$	-.0351	(2.8)	+.0407	(0.3)	-.0519	(3.6)	+.0839	(0.5)
$EMPDUM_A$	-.000024	(3.1)	+.000114	(1.1)	-.000032	(3.8)	+.000133	(1.2)
HWK_{SW}	-.000487	(1.5)	+.002109	(0.5)	-.000757	(2.2)	+.002727	(0.6)
$HWK_{SW} \leq 40$	-.000434	(1.4)	+.001401	(0.4)	-.000708	(2.2)	+.002007	(0.5)
$WKDUM_{SW}$	-.000015	(1.8)	+.000003	(0.0)	-.000022	(2.5)	+.000016	(0.1)
SLY	-.000012	(2.4)	-.000085	(1.4)	-.000012	(2.5)	-.000084	(1.4)
SLW	-.000009	(2.2)	+.000008	(0.2)	-.000010	(2.4)	+.000010	(0.2)
ACTLY	-.000026	(3.4)	+.000069	(0.7)	-.000033	(4.1)	+.000089	(0.9)
ACTLW	-.000017	(2.1)	-.000039	(0.4)	-.000024	(2.8)	-.000024	(0.2)
No Kids					-.000018	(2.3)	+.000067	(0.7)
	For Those Not in School (based on NEY1)							
HLF_A	-.0478	(3.8)	-.0846	(0.9)	-.0637	(4.3)	-.0439	(0.4)
$HEMP_A$	-.0464	(3.8)	-.0732	(0.8)	-.0618	(4.3)	-.0320	(0.3)
$EMPDUM_A$	-.000024	(3.0)	+.000041	(0.7)	-.000031	(3.5)	+.000058	(0.9)
HWK_{SW}	-.000713	(2.2)	-.002192	(0.9)	-.000956	(2.7)	-.002004	(0.8)
$HWK_{SW} \leq 40$	-.000664	(2.1)	-.002105	(0.9)	-.000910	(2.7)	-.001931	(0.8)
$WKDUM_{SW}$	-.000020	(2.3)	-.000064	(1.0)	-.000026	(2.9)	-.000062	(0.9)

income, assets, and thus NEY. This same line of reasoning probably explains why there is a negative relation between NEY and the wife's schooling. The negative relation between husband's earnings and wife's schooling is more puzzling, but probably occurs because both are going to school simultaneously. Hopefully we can take account of this problem (and the problem of women having a different marital or child status in the survey week than last year) in future results. For the moment we can simply concentrate on the results for those out of school.

When we disaggregate by presence (and age) of children, we have stronger expectations for how the results for young wives are likely to compare with those for wives, 25-54. For young wives with children we expect income (and substitution) elasticities similar to those for older wives with children the same age. For young wives without children, however, we expect somewhat lower income elasticities than for older wives with no children (under age 18) because most such wives are likely to be trying to purchase consumer durables and accumulate a nest egg before having children. Moreover, in contrast to older wives whose children have grown, younger wives do not experience the economic and/or psychological difficulties involved in reentering the labor market.

The results are presented in Table 9. The NEY coefficients are now often negative and very large in absolute value, but are still never statistically significant. While the HE coefficients are always negative, they are only statistically significant for those with children.

Elasticity estimates are presented in Table 10. The estimates based on NEY are quite erratic and probably do not deserve much attention because of the biases mentioned above and because of the very small

TABLE 9

SEO Income Coefficients for Wives, 20-24, Not in School
Disaggregated by Presence of Children

	Kids				No Kids			
	HE		NEY		HE		NEY	
HLF_A	-.0510	(3.2)	-.1514	(1.4)	-.0316	(1.5)	-.0043	(0.0)
$HEMP_A$	-.0510	(3.3)	-.1432	(1.3)	-.0269	(1.3)	+.0255	(0.1)
$EMPDUM_A$	-.000031	(2.7)	+.000023	(0.3)	-.000008	(0.8)	+.000063	(0.8)
HWK_{SW}	-.001024	(2.6)	-.003182	(1.1)	-.000093	(0.2)	-.002737	(0.5)
$HWK_{SW} \leq 40$	-.000989	(2.7)	-.003192	(1.3)	-.000044	(0.1)	-.002360	(0.5)
$WKDUM_{SW}$	-.000028	(2.7)	-.000089	(1.3)	-.000003	(0.2)	-.000074	(0.5)

TABLE 10

SEO Income Elasticity Estimates for Wives, 20-24, Who Are Not in School

	Total				Ages 25-54	
	No Kids Control		Kids Control		Kids Control	
	HE	NEY	HE	NEY	HE	NEY
HLF_A	-.54	-.37	-.40	-.73	-.44	-.22
$HEMP_A$	-.55	-.28	-.41	-.66	-.43	-.20
$EMPDUM_A$	-.37	+.68	-.29	+.48	-.33	-.18
HWK_{SW}	-.47	-.98	-.35	-1.07	-.45	-.23
$HWK_{SW} \leq 40$	-.46	-.98	-.34	-1.06	-.45	-.25
$WKDUM_{SW}$	-.46	-1.10	-.36	-1.14	-.31	-.22

	Kids < 6				No Kids			
	20-24		25-54		20-24		25-54	
	HE	NEY	HE	NEY	HE	NEY	HE	NEY
HLF_A	-.65	-1.94	-.58	.00	-.16	-.02	-.31	-.47
$HEMP_A$	-.71	-1.99	-.59	+.04	-.14	+.13	-.32	-.44
$EMPDUM_A$	-.44	+.32	-.40	-.19	-.07	+.56	-.24	-.38
HWK_{SW}	-.70	-2.16	-.70	-.17	-.03	-.88	-.32	-.46
$HWK_{SW} \leq 40$	-.71	-2.29	-.66	-.26	-.01	-.77	-.33	-.49
$WKDUM_{SW}$	-.38	-1.21	-.68	-.11	-.04	-.90	-.30	-.47

average values of NEY for young wives (see Table 1). Fortunately, the estimates based on husband's earnings are more interesting.

As long as we standardize for presence and age of children (as we did for older wives), the elasticity estimates based on husband's earnings are slightly lower for wives, 20-24, than for those 25-54. The most interesting comparisons, however, are when we disaggregate by age of youngest child. For those with children less than six, the husband's earnings elasticity estimates are very similar for young and prime age wives. On the other hand, the corresponding estimates for those with no children are considerably lower for the young wives than for the prime-age group. These results, based on husband's earnings for out of school wives, correspond quite well with our a priori expectations.

VI. WAGE RATE AND SUBSTITUTION EFFECTS

For a variety of reasons discussed earlier, the LNPW coefficients and substitution elasticities for young people are far less reliable than the income coefficients and elasticities. In Table 11 the LNPW coefficients from the labor supply, school, and activity status regressions are presented. Because the rest of the wage rate coefficients are not comparable to those for other groups, and tend to be extremely unreliable in Table 12 we report the wage rate and substitution elasticities only for young people not in school.

Given the positive near mechanical relationship between the potential wage rate and ordinary school attendance, the significant positive coefficients for school last year are not surprising. It is surprising, however, that there is a negative relationship for single males for school

TABLE 11
LnPw Coefficients for Young People

	Married Males	Single Males	Single Females	Married Females (with kid control variables)		
				Total	Kid	No Kid
SLY	.294 (4.2)	.166 (1.8)	.180 (2.5)	.385 (8.2)	.226 (4.3)	.602 (6.5)
SLW	.262 (3.3)	-.176 (1.8)	.035 (0.5)	.260 (6.8)	.245 (6.4)	.294 (3.5)
ACTLY	all active	.090 (3.6)	.119 (3.7)	.294 (4.0)	.326 (2.9)	.201 (3.0)
ACTLW	.039 (0.7)	-.024 (0.4)	.155 (2.7)	.379 (4.8)	.380 (3.6)	.317 (2.6)
Interaction Term for Those in School:						
HLF_A	-67 (2.1)	-315 (5.6)	-524 (6.1)	-395 (2.5)	-274 (1.1)	-178 (0.8)
$HEMP_A$	-37 (0.8)	-240 (4.1)	-507 (5.6)	-378 (2.4)	-286 (1.2)	-125 (0.6)
$EMPDUM_A$	.028 (1.7)	-.072 (2.0)	-.146 (3.0)	-.115 (1.1)	-.001 (0.0)	.010 (0.1)
HWK_{SW}	-10.0 (4.0)	-16.7 (7.1)	-16.5 (5.5)	-5.8 (1.7)	-10.6 (2.1)	-4.0 (0.8)
$HWK_{SW} \leq 40$	-8.7 (4.5)	-14.5 (8.0)	-14.2 (6.2)	-5.9 (1.8)	-10.4 (2.2)	-4.6 (0.9)
$WKDUM_{SW}$	-.180 (3.8)	-.347 (6.4)	-.342 (5.1)	-.097 (1.1)	-.178 (1.3)	-.081 (0.6)
Out of School:						
HLF_A	7.9 (0.2)	413 (4.1)	439 (4.5)	563 (4.3)	287 (1.6)	781 (3.8)
$HEMP_A$	46.0 (0.6)	310 (2.9)	442 (3.8)	620 (4.8)	386 (2.3)	802 (3.9)
$EMPDUM_A$	.034 (1.3)	.221 (3.3)	.191 (5.9)	.199 (2.4)	.148 (1.2)	.204 (2.2)
HWK_{SW}	-0.4 (0.1)	8.0 (1.8)	14.2 (0.7)	10.0 (2.9)	4.9 (1.1)	10.3 (1.7)
$HWK_{SW} \leq 40$	4.0 (1.4)	10.7 (3.4)	15.6 (5.3)	9.9 (3.0)	5.6 (1.4)	10.0 (1.7)
$WKDUM_{SW}$	.115 (1.7)	.258 (2.6)	.433 (5.0)	.279 (3.1)	.239 (2.1)	.219 (1.4)

TABLE 12

Wage Rate and Substitution Elasticities for Young People
Who Are Out of School

	Married Males		Single Males		Single Females		Married Females					
							Total		Kid		No Kid	
	20-24	25-54	20-24	25-54	20-24	25-54	20-24	25-54	20-24	25-54	20-24	25-54
	Wage Elasticity											
HLF_A	.00	.02	.25	.06	.27	.22	.67	.43	.50	.34	.50	.54
$HEMP_A$	.02	.05	.20	.17	.29	.23	.78	.47	.76	.39	.53	.59
$EMPDUM_A$	.03	.01	.24	.01	.21	.15	.33	.30	.30	.28	.22	.32
HWK_{SW}	-.01	.05	.26	.19	.47	.29	.68	.66	.46	.67	.41	.66
$HWK_{SW} \leq 40$	.11	.09	.40	.20	.55	.23	.70	.67	.56	.62	.40	.68
$WKDUM_{SW}$	.12	.07	.35	.16	.57	.25	.70	.64	.80	.67	.33	.56
	Substitution Elasticity*											
HLF_A	.01	.07	.27	.16	.26	.48	.75	.49	.58	.39	.55	.60
$HEMP_A$	.00	.09	.23	.23	.28	.46	.87	.52	.85	.44	.58	.65
$EMPDUM_A$	.01	.04	.24	.03	.21	.32	.35	.35	.36	.32	.24	.37
HWK_{SW}	-.03	.01	.26	.11	.47	.69	.75	.72	.55	.72	.42	.72
$HWK_{SW} \leq 40$	.06	.09	.38	.26	.54	.43	.77	.73	.65	.67	.40	.75
$WKDUM_{SW}$	.09	.06	.33	.26	.57	.52	.78	.70	.85	.71	.34	.62

*Based on OE or HE estimates for young people. For wives we use the estimates controlling for age of youngest child.

in the survey week. Perhaps single men with relatively little schooling are more likely to attend night school. In any case, we believe these coefficients are not very informative. As noted above, during the year at one time or another all males either worked or attended school. For other groups there is generally a positive relation between the potential wage and activity status last year, probably reflecting both differences in job opportunities and tastes for schooling and market work vis-a-vis home work and leisure.

The wage rate coefficients for those attending school are often negative, a result that is not surprising in view of the negative bias in the wage rate coefficient which arises out of the fact that those in school who work will normally have completed fewer years of school than those of the same age who do not work. The coefficients in the survey week are more negative (at least for males) in large part because they measure the difference between the labor supply of those enrolled in night school and those enrolled in day school. This is the extreme case of the bias discussed above. Individuals enrolled in night school will have completed fewer grades of school and therefore be assigned lower potential wage rates than those of the same age who are enrolled in day school. But they are likely to be enrolled in night school rather than day school precisely because they are working full time or near full time.

More important wage rate results can be obtained by restricting the analysis to young people who are not in school. None of the wage rate coefficients for married males not in school are statistically significant. The wage rate coefficients and elasticity estimates for the other groups are substantially more positive than those for married

males. As with the married men, the signs of the wage rate coefficients in the single regression are less positive for HWK_{SW} than for $HWK_{SW} \leq 40$. This suggests that young single people with low wage rates are more likely than those with high wage rates to be unemployed, but given employment they are more likely to work overtime. While this negative relationship between overtime and wage rates may reflect an income effect it is also possible that those with low potential wage rates will generally have been out of school longer and thus may have acquired more opportunities for and interest in overtime.

In Table 12 we present wage and substitution elasticity estimates. For married males, the wage elasticities are about the same for the young as for the prime ages. While the substitution elasticities are generally smaller for the young, we think that this differential may result mainly from a large positive bias in the income elasticity estimates for the younger men.

For single males the estimates are definitely somewhat higher for those 20-24 than for those 25-54, which is consistent with our expectation that young single men would be under less pressure to work. (While demand factors probably play a role, the larger differentials for HLF_A than for $HEMP_A$ suggest that some other factor(s) must also be involved.)[21]

For single females, the substitution elasticity is larger for those 25-54, at least for the annual results. The differences are attributable to differences in income elasticities. This finding makes sense if we assume that older single women are more oriented toward consumption (e.g., housing, leisure) and less toward investment (setting away a nest egg for after marriage, clothes to help attract a husband, etc.). The larger differential for the annual results may reflect the desire of older single

women to take time off for travel and other vacations if they can afford to do so.

As indicated earlier, for comparing results for young and prime-age wives the most relevant comparisons can be made when we disaggregate by presence of (young) children. For wives with no children the wage and substitution elasticity estimates based on the annual measures of labor supply are about the same for the young and the prime age groups. For the survey week the estimates are lower for the young wives, probably primarily because all the survey week substitution elasticities for prime-age wives are unnaturally high for some reasons we do not yet understand (perhaps a seasonality factor of some kind).

For wives with young children the substitution elasticities based on the annual measures are larger for the young wives than for the prime age group. Perhaps this reflects a greater preference for market versus home work among highly educated young wives with children (which may be related to the recent emphasis on "women's lib").

In summary, our wage results for young males are subject to unusually severe biases except perhaps for those out of school. The wage results for the latter group, which are subject to the normal positive biases, with the exception of $HWK_{SW} \leq 40$ yield very small substitution elasticity estimates for young married men, but larger estimates for young single men.

VII. CONCLUSION

In this paper we have estimated income, wage, and substitution elasticities for young males and females. When we do not standardize for schooling, most of the income elasticity estimates are reasonably

large, mainly because of the effect of income on schooling. Except for wives, the income estimates for those out of school are quite small. Due to various biases we only calculate wage and substitution elasticities for those out of school. These estimates are very low for married males, somewhat higher for single males and females, and moderately high for wives.

FOOTNOTES

[1]Economic theory assumes that an individual's choice between work and leisure (or other nonwork activities) depends on his net wage rate and his nonwage income. Since, other things being equal, the individual is assumed to prefer leisure to work, an increase in his nonwage income will lead him to work less and "consume" more leisure. In other words, there is a negative income effect on labor supply.

A change in the net wage will have a similar income effect on labor supply. However, there will also be a positive substitution effect in this case since an increase in the net wage means that each hour of leisure is now more expensive. Thus an increase in the wage may lead to either an increase or a decrease in the supply of labor depending on whether the substitution or income effect dominates.

Income transfer programs involve a guarantee, G, the amount of income a given individual or family will receive if they have no other income and a marginal tax rate, r, the rate at which the income support decreases as the family's earnings and other sources of income increase. Income maintenance programs not only increase the beneficiary family's nonwage income, but, if the marginal tax rate is positive, also reduce the net wage of each family member. Thus both the total income effect and the substitution effect will act to reduce the family's work effort.

Some income transfer programs have a zero guarantee and a negative marginal tax rate. These earnings or wage subsidy programs could lead to either increases or decreases in labor supply because while they increase income, they also increase the cost of leisure by increasing net wage rates.

[2]The results reported in these papers will constitute a major part of our forthcoming monograph on The Labor Supply Effects of Income Maintenance Programs.

[3]The activity status concept originated with Bowen and Finegan. According to their definition a young person who is either in school or in the labor force is active while an individual who is neither in school nor in the labor force is categorized as inactive.

[4]While many forms of homework unlike education do not have an investment component it is quite likely that caring for young children, a very important element of the homework of women with young children, does have an important investment component. Even if it turns out that early childhood care has little effect on the child's future, mothers behave as if they believe that the kind of care they give their young children is important for investment as well as consumption purposes.

[5]For reasons discussed later our data do not permit us to estimate reliable wage rate effects for the total sample.

[6]We use only the 1967 SEO data because only part of the 1966 sample was re-interviewed in 1967 and the 1967 questionnaire is superior in a number of ways, the most important of which is that an hourly wage rate variable is available for 1967 but not for 1966. We use the self-weighting sample only because it is sufficiently large to make reliance on the over-sampled poor part of the sample unnecessary. Moreover, we have some qualms about using the supplementary subsample because we believe that the way the sample was chosen may introduce some biases into our results. While it is possible to weight the total sample in such a fashion that it corresponds to the self-weighting sample, there is not a one-for-one correspondence between the method of selecting the supplementary subsample and the method of assigning the weights.

[7]The survey week took place in early spring. Unemployment is generally higher than average in this period.

[8]The following information on the family's asset position is available in the SEO: (1) market value and mortgage or other debt of farms, businesses or professional practices, (2) market value and debt of real estate, (3) market value and debt of own home, (4) money in checking, savings accounts, or any place else, (5) stocks, bonds, and personal loans and mortgages, (6) market value and debt of motor vehicles, (7) other assets (excluding personal belongings and furniture), and (8) consumer debt.

A conceptually appropriate measure of NEY would include imputed returns to assets as well as reported returns from assets. A house no less than a bond produces a stream of goods and services unrelated to current work effort. If assets with no reported return vary directly (inversely) with measured or reported nonemployment, failure to impute a return to assets will lead to a negative (positive) bias in the NEY coefficient. But while it is clear that some return should be imputed to assets, doing so creates several problems.

First, it is not clear what interest rate to use for imputing returns to these assets. The interest rate is important because, given observations on labor supply and net worth, the NEY coefficient will vary inversely with the interest rate.

A second much more serious problem is that certain kinds of assets are likely to be spuriously correlated with labor supply. For three reasons, this problem is likely to be especially severe for equity in one's home. First, the supply of mortgage loans will depend in part on how steady a worker the individual is. Second, home ownership normally entails a commitment to steady work to repay a large mortgage debt. Finally, both home ownership and full-time work are, in part, reflections of individual characteristics such as steadiness and ambition.

8 (cont.)

The spurious positive correlation between home ownership and labor supply may dominate the theoretical negative relationship between NEY and labor supply if an imputed return to the individual's equity in his home is added to reported NEY. Home equity accounts for about one-half of all assets for which no return is reported. And, even if only a 5 percent return is imputed to home equity, this one source of imputed NEY will be slightly larger than total reported NEY.

Finally, data on assets in the SEO are frequently missing so that an additional cost of trying to impute returns to assets is the loss of all the missing data observations.

Given the above arguments, we believe that an alternative procedure to imputing income to assets is desirable. The simplest alternative, which we have adopted, is to include in all regressions in addition to a reported NEY variable, a variable which measures the value of assets that have no reported return in the SEO. This approach not only provides a solution to the spurious correlation problem but also solves (or skirts) the problem of choosing the appropriate interest rate to impute assets.

[9]The statement in the text should be qualified slightly. Guarantees and implicit marginal tax rates vary from state to state. In addition, eligibility depends upon other variables besides income. But for each P.A. beneficiary in the sample, it remains true that numerous nonbeneficiaries living in the same state, with the same family size, potential wage rate, and other characteristics, have the same budget constraint.

[10]The point in the text can be illustrated with the aid of the diagram. Hours worked is measured from left to right on the horizontal axis and total income is measured along the vertical axis. Assume both individuals have a market wage rate of OW. Further assume that if they earn less than G dollars (work less than H hours) they are eligible for a public assistance subsidy equal to $G less whatever they earn. Hence, the budget line is OGJW. (Although not all public assistance programs have implicit 100 percent tax rates as depicted in Figure 1, most did in 1967, the year when our SEO data were collected. The basic analysis is not altered by assuming a less than 100 percent tax rate.) I_1 represents an indifference curve of man I. It is tangent to the JW segment of the budget line at E_1. Man I, therefore, works F hours and receives no public assistance. I_2 represents the indifference curve of man II. Man II clearly has a much stronger aversion to work (vis-a-vis income) than does man I. He achieves a corner solution at E_2, works 0 hours and receives OG dollars in public assistance. Clearly, to the extent that work reductions are a voluntary response to the availability of transfers, the transfer is a proxy for taste differences.

10 (cont.)

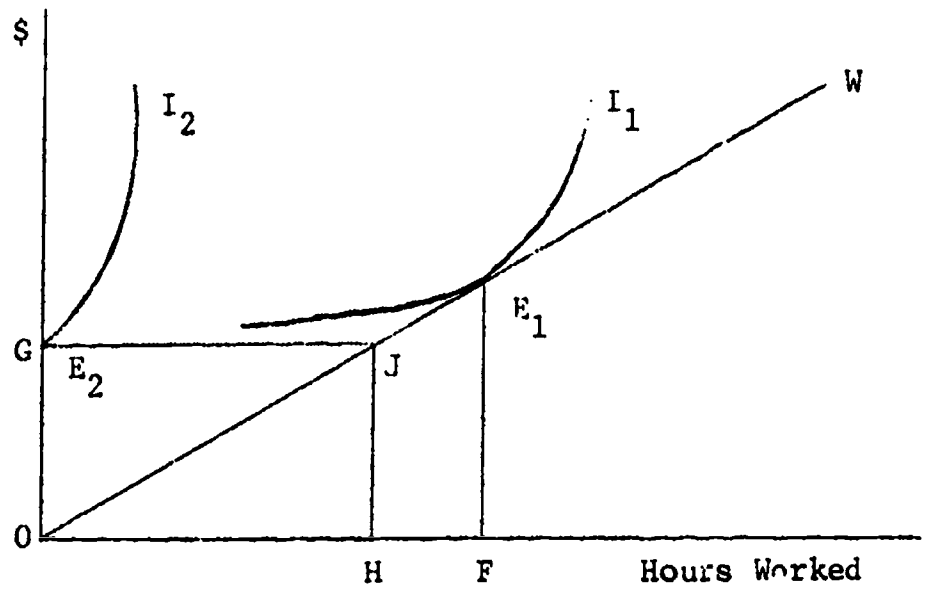

Figure 1

[11]In a previous paper in which we examined labor supply schedules of female heads of households, we also examine the labor supply elasticities of this group with respect to guarantees and tax rates in the Aid to Families with Dependent Children program. Because there are so few other P.A. beneficiaries, this procedure is not viable with other demographic groups.

There are two reasons for simply excluding P.A. beneficiaries in other groups from the sample. First, because of the implicit marginal tax rates in the P.A. programs, it is difficult, in some cases impossible, to specify the potentially effective wage rate that confronts P.A. beneficiaries. Consequently, including P.A. beneficiaries may distort wage rate coefficients. In addition, since a potential beneficiary must dispose of his assets other than his home before he can qualify for public assistance, P.A. beneficiaries will have no nontransfer NEY. At the same time their labor supply will be low. Thus including them in the sample and excluding P.A. payments from NEY may lead to a positive bias in the NEY coefficient. On the other hand, since P.A. beneficiaries can be expected to have lower than average wage rates and to work less than average, simply excluding them could lead to a negative bias in the WR coefficient. Since the NEY coefficients were virtually the same but the wage rate coefficients were less positive when P.A. beneficiaries were excluded, with the exception of female heads of households we report results only from samples which exclude P.A. beneficiaries.

[12]While it would be possible in principle to estimate the response of the unemployed to the parameters of the UC program that they confront, in practice it is nearly impossible to identify these parameters from the SEO data.

[13]We use family head's income rather than total other earnings for single people living with their parents since the mother may often work to help put the children through school.

[14]Hourly wage rates are unavailable for all individuals who did not work for wages during the survey week. This includes both the self-employed and the unemployed.

[15]There are some other less important sources of measurement error. Of these perhaps the most important stems from the confusion between gross and net earnings. Although interviewers were instructed to obtain normal gross weekly earnings, because many individuals are likely to know only their take home pay, there is undoubtedly some error due to confusion between gross and net. Experience in the New Jersey Income Maintenance Experiment suggests that it took many interviews for families to learn the distinction well and to consistently report gross earnings. See Harold W. Watts and John Mamer, "Wage Rate Responses," in Final Report of the Graduated Work Incentives Experiment in New Jersey and Pennsylvania (Report to the Office of Economic Opportunity, August 1973).

Note that when hours worked is the dependent variable, the measurement error will not be random. The wage rate variable will be negatively correlated with the error term and a negative bias will result.

[16]Because the major rationale for estimating these labor supply functions is to use them to estimate the effects of transfer progams on labor supply, this is a definite advantage which will be important in our forthcoming monograph on the issue of the effects of transfer programs on labor supply.

To calculate the reductions implied by the coefficients, one can multiply the income coefficient by the NIT guarantee, and, multiply the wage rate coefficient by the difference between NIT tax rate and the tax rate of beneficiaries. The percentage reduction is simply the sum of these two divided by the mean labor supply of the sample population.

[17]While on the job training (OJT) gives work in these early years investment aspect, there is also some OJT aspects for prime-aged males. Moreover, the accumulation of seniority status is likely to provide just as strong an economic incentive for prime-aged males to work continuously as any potential benefits the young might derive from OJT.

[18]When the labor supply variable is last year, we use our measure of schooling last year as our control variable. When the labor supply variable is for the survey week, we use the survey week schooling measure.

[19]These coefficients are obtained by adding variables interacting school status with our income variables. For NEY we use separate variables for those in and out of school. For OE and HE we add a variable for OE (or HE) times school status.

[20]For wives 20-24 we have excluded those with children aged six or older partly because we suspect that those who have children at a very young age may have different labor supply behavior than others and partly so that when we do disaggregate by presence of children our results will be reasonably comparable to the results for wives 25-54 when the latter are disaggregated by age of youngest child.

[21]If young single males have difficulty finding a job, they may be much more likely to drop out of the labor force than their older counterparts who are under similar circumstances. Thus this difference in attitudes may interact with demand factors to account for the observed pattern of results.