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THE DISTRIBUTION OF FAMILY INCOME AND EARNINGS CAPACITY OVER THE LIFE CYCLE

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ABSTRACT

The authors use data from the 1973 National Survey of Family Growth to analyze the distributions of income and earnings capacity for husband-wife units. Dividing the life cycle into three periods according to the presence and age of children, they address the following questions: (a) What are the patterns of capacity utilization of the various demographic groups across the life-cycle stages? (b) What is the relationship between the distributions of earnings capacity and income? (b) How are the distributions of male and family income related? Does the market activity of wives narrow or widen the income gap between rich and poor families? How do the presence and age of children affect the results? Separate analyses are conducted for white and black families.

INTRODUCTION

Over the past two decades, an extensive literature has been built on the subject of the distribution of economic well-being. Most efforts in this area have been directed towards expanding the income measure by adding to the basic family income figure other components of welfare, such as the value of husband's and wife's leisure, and the value of productive activities in the household. Representative studies are Sirageldin (1969), Taussig (1973) and Moreno (1978). A recent book by Garfinkel and Haveman (1977) offers an approach which complements previous research in this field. The authors focus on economic status as indicated by the individual's ability to command market goods. For some applications, this somewhat narrower view of economic status may be more useful than the more comprehensive welfare concept emphasized in previous studies. For example, if one's objective is to analyze the expenditure patterns of households at various stages of the life cycle, it is more important to know what their actual and potential purchasing powers are at each stage than to know how "well-off" they are in a more broadly defined sense.

If we focus on economic status as measured by ability to command market goods, two concepts are relevant: (a) the income available to the economic unit, which reflects actual purchasing power, and (b) its "earnings capacity." Garfinkel and Haveman (G-H) define this measure as the income an economic unit would generate if it fully utilized its resources. Earnings capacity thus reflects potential, as opposed to actual, consumption possibilities.

The distributions of income and earnings capacity differ for three major reasons. First, the operation of income and substitution effects leads various persons to utilize their capacities at different rates. Second, some individuals face exogenous constraints which prevent them from realizing their potential earnings to the extent desired. Third, variations in preferences for market work and income versus leisure and home activities lead various people to supply different amounts of labor.

The main objective of this study is to analyze and compare various aspects of the distributions of income and earnings capacity. We focus attention on one important group of society: husband-wife units. Although the propensity to live alone has been rising steadily in recent years, families headed by husband and wife still constitute the predominant social arrangement. In the process of investigating the distributions of family income and earnings capacity, the distributions of the underlying male and female variables are examined.

The present study is a period analysis. Following our previous work (Lehrer and Nerlove, 1980) the life cycle is divided into three distinct stages: the interval between marriage and first birth, the child-rearing stage, and a final period which begins when all the children have reached school age. To the best of our knowledge, our analysis is the first of family income and earnings capacity distribution in which life-cycle stage is distinguished by the presence and age of children; previous studies generally represent life-cycle period by age. Since (a) the wife's earnings potential and, especially, her actual income, are crucially affected by fertility, and (b) her earnings capacity and income contribute importantly to the respective family variables, we regard the presence and age of children to be more significant indicators of where a family is at in its life cycle than age.

Building on the work of Garfinkel and Haveman (G-H), we address the following questions: (a) What are the patterns of capacity utilization of the various demographic groups across the life cycle stages? (b) What is the association between the distributions of earnings capacity and income? (c) How are the distributions of male and family income related? Does the market activity of wives narrow or widen the income gap between rich and poor families? How do the presence and age of children affect the results?

The data set employed in this study is the 1973 National Survey of Family Growth. This survey, conducted by the National Center for Health Statistics, Department of Health, Education and Welfare was addressed to 9,797 women, who, at the time of the interview were currently married, previously married or single with natural children living in the household. It contains pregnancy, marital status and female employment histories, as well as a number of other socio-economic variables, including information on the various income sources available to the respondent and her family. Cases corresponding to the following respondents were eliminated: (a) unmarried women, (b) women whose race was neither black nor white, and (c) women who had no children and expected to have none in the future. Cases with illegitimate codes for relevant variables were also excluded. The resulting sample size was 5,901.

To allow for possible structural differences by race, separate models are estimated for blacks and whites. We caution the reader that our results for the group of blacks must be regarded as tentative in nature, since they are based on relatively small sample sizes.

The plan of this paper is as follows: Section B discusses the concepts of earnings capacity and utilization. Section C reports the wage regressions which are used to estimate earnings capacity. In Sections D, E and F we take up, in order, the questions raised above. Finally, some conclusions and directions for further research are presented in Section G.

B. ESTIMATION OF EARNINGS CAPACITY AND UTILIZATION

G-H define an individual's earnings capacity as the income the individual would generate if he or she worked full-time in the market.[1] In order to implement this definition, G-H divide their sample into various groups, according to race and sex, and then they estimate separate regressions for each set. Their dependent variable is annual earnings. Among the explanatory variables they include are: schooling, age, marital status, presence of children, a dummy indicating full or part-time employment during the survey week, and dummies controlling for the number of weeks worked during the year. These regressions are then used to impute an earnings capacity to each individual. The procedure, as described by G-H, is the following: (p. 14)

> For each individual...the values of the two employment variables in the regression equation are fixed at full time and 50-52 weeks and the values of the remaining variables in the equation are the individual's observed human capital and demographic characteristics. Each individual's imputed earnings capacity is obtained by choosing the regression equation corresponding to the individual's race and sex, multiplying the value of the remaining variables by the coefficient associated with it in that regression equation, and aggregating these products over the variables.

The procedure quoted above has an important shortcoming. Since the dependent variable is annual earnings, the estimated coefficients confound the effects of exogenous variables on (a) wages (i.e., hourly earnings), and (b) labor supply. This imparts a positive bias on the estimated relationship between earnings capacity and utilization. In addition, we have some reservations with regard to the earnings regressions themselves. First, due to deficiencies in the data set employed by G-H, major determinants of earnings are omitted, among them, experience and,

very significantly for the group of married women, measures of the husband's economic status. Second, although this is a common procedure in the literature, we find it somewhat objectionable to have weeks worked as a regressor in an equation explaining earnings, since, by definition, earnings = wage x hours per week x total weeks. Inclusion of weeks worked thus results in extremely significant coefficients, which may obscure the effects of other variables.

In our work, we estimate earnings capacity by multiplying the individual's wage by a standard number of hours (2,080 hours, based on full-employment work of 52 weeks, 40 hours per week). For those individuals who participate in the labor force, we compute the wage by dividing annual earnings by the total number of hours worked furing the year. For those with a zero level of labor supply, we impute wages using instrumental regressions based on the sample of working individuals.

Following G-H, utilization is defined as the ratio of actual income from employment to earnings capacity. This ratio may exceed 1 if the individual works more than 40 hours per week, which is not unusual, or if he holds a secondary job.

C. WAGE REGRESSIONS

The first step toward the computation of earnings capacity is to estimate wage regressions for each demographic group. These regressions may then be used to impute a wage to those cases in which the wage variable is missing. Separate equations are estimated by sex, race and life-cycle stage at the time of the interview.

Male Wage Regressions

The wage regressions for men are reported in Table 1. Following the tradition in the literature, our dependent variable is the natural logarithm of the wage. Among our independent variables we include education, measured in terms of years of regular schooling, and experience. This is computed by subtracting 6 and the years of schooling from the individual's age at the survey date. The underlying assumption behind this procedure is that men work continuously after completing their education, a valid one in most cases. We also control for the median income earned in the individual's occupation (based on the 1970 Census, U.S. Summary, part 1, p. 1-766), and for residence in the South, or outside a Standard Metropolitan Statistical Area.

Examination of Table 1 reveals that blacks benefit less from education than do whites. In every period we find that each additional year of schooling adds more to the wages of whites than it does to the wages of blacks. This agrees with earlier findings in the literature (e.g., see Harrison, 1972). The coefficients of the experience variables are remarkably different among the races. In period 1, the coefficient of experience is larger for whites than for blacks; the difference is markedly accentuated in period 2; in period 3, while whites are still benefiting from additional experience, the coefficient of this variable becomes insignificant for blacks. The squared experience variable is negative and signifi-

cant for whites in all stages; for blacks, it is only significant in period 1. The occupation variable is significantly positive in all cases, except for blacks in period 1. Residence in the South always decreases wages; residence outside a SMSA has a negative effect on wages only among whites.

Female Wage Regressions

Table 2 reports our regressions for women. Preliminary analyses based on Heckman's (1976) methodology showed no evidence of selectivity bias; thus ordinary least squares procedures are employed. As before, the dependent variable is the natural logarithm of the wage, and education is measured in years of regular schooling. For the case of women, the information contained in the survey allows us to include another variable, "Special Education." This equals 1 if the woman had some other training, such as technical education, and 0 otherwise. The experience variable represents the total number of years in which the woman participated in the labor force, up to the survey date. This is computed using the retrospective female employment histories available in the survey. The occupation and location variables are defined in the same way as for men, except that the former is now based on the 1970 Census figures for women.

Inspection of Table 2 shows that, as expected, the education variables have a positive impact on the wage. Contrary to what we found for men, the coefficients are not always larger in the group of whites. The experience-wage profile of white women is interesting: while experience has a strong impact on the wage in the pre-first birth period, this effect vanishes in the child-rearing years, reappearing, though not as strongly as before, in the post child-rearing stage. A plausible explanation lies in the discontinuity of labor force participation in the child-rearing interval, and the depreciation of skills this implies. The experience-wage profile of black women is strikingly different. While the coefficient of experience is insignificant in the interval between marriage and first birth, it is strongly positive in the subsequent stages. This racial difference

may, in part, reflect the different life-cycle capacity utilization patterns displayed by white and black married women, as documented in section D.

As expected, the coefficients associated with the median income earned in the respondent's occupation are always positive and significant. Residence in the South is negatively associated with wages, but not strongly so for whites. Living outside a SMSA only depresses wages significantly among whites in period 3, and blacks in period 2.

D. PATTERNS OF CAPACITY UTILIZATION

As shown in the next section, whether the income of a demographic group is characterized by more or less dispersion than earnings capacity, depends importantly on the nature of the gross association between earnings capacity and utilization (i.e., without controlling for other variables). Thus, the utilization patterns of married men, women and families are examined here. In what follows we attempt to explain the relationship between earnings capacity and utilization in terms of income and price effects. Underlying the analysis is the common, albeit strong, assumption that preferences and constraints do not vary systematically with the level of earnings capacity.

Examining the case of men first, the nature of the association between earnings capacity and utilization is ambiguous *a priori*, since a chance in earnings capacity gives rise to substitution and income effects which work in opposite directions. An increase in earnings capacity makes leisure more expensive, thus creating an incentive to supply more labor to the market. On the other hand, the increase in earnings capacity is associated with a higher income, which enables the individual to demand more leisure. To the extent that men with high earnings capacities tend to have relatively high levels of non-labor resources, this would reinforce the income effect associated with a higher wage level.

While similar effects operate in the group of women, several differences must be noted. First, in addition to the influences described above, there is another substitution effect which leads wives to work more in the market and less at home as earnings capacity rises. This phenomenon, which was first emphasized in the pioneering work of Mincer (1962), greatly increases the probability that higher earnings capacities will be associated with higher utilization rates among married women. Second, the magnitude of the income change associated with a change in earnings capacity is a positive function of the level of labor supply. This is because if an individual is supplying, say, a very small amount of labor, the amount of enrichment caused by a wage increase will, likewise, be small. Since married women typically display lower levels of labor supply than their husbands, we may expect the income effect to be smaller for the former group. Third, in the extreme case where the level of labor supply is zero--a common situation among wives--there is no income effect; however, the substitution effects still operate. Thus, for non-labor force participants, an increase in earnings capacity unambiguously increases the probability of entering the labor force. Fourth, for wives, these relations are complicated by the following facts: (a) Positive assortative mating by education in the marriage market would lead women with high earnings capacities to marry men who also have relatively high earnings capacities, and (b) the labor supply of married women is quite sensitive to variations in the husband's economic situation. Thus, if we examine the gross association between married women's earnings capacity and utilization, a positive sign would indicate that the own substitution effects outweigh the income effects associated with their husband's and their own earnings capacities.

The empirical findings are displayed in Table 3. Panel A shows the relationship between earnings capacity and utilization for white and black men in the various periods. Several observations may be made. First, among white men,

there is a marked negative association between earnings capacity and utilization in all periods, suggesting that the income effect is stronger than the substitution effect. Although the association is clearly not monotonic for blacks, the overall pattern suggests a weak negative relationship. Second, expressed as percentages, many of our utilization figures exceed 100. As is clear from Table 4, this is due to the fact that a substantial proportion of men work more than 2080 hours in their primary jobs, and further, many of them hold secondary jobs. It is interesting to note that, perhaps because of the different estimation procedure employed by G-H, all of the utilization rates they report are less than 100.

Third, white men display greater utilization rates in each group than their black counterparts, with the exception of the third quartile in period 1. Fourth, the utilization rates of white men increase steadily as they advance from one period to the next; this result holds for all the quartiles. The irregular pattern uncovered for black men may reflect a mixture of strong cohort and life-cycle effects in this group.

Panel B of Table 3 reports our findings for the group of married women. As expected, both white and black married women display the lowest utilization rates in the child-rearing stage. It is interesting to note, however, that while for whites, the peak utilization rates in all quartiles occur in the pre-marriage interval, for blacks they occur in the post child-rearing stage. In addition, whites display higher levels of labor supply than blacks in period 1, but the opposite result holds in periods 2 and 3.

Although the relationship between earnings capacity and utilization is not monotonic in all periods for the group of black women, in general, the figures

suggest a fairly pronounced positive association between these variables. Thus, for this group, the substitution effects appear to be stronger than the income effects. For whites, the relationship exhibits marked non-linearities. One can say, however, that in all periods, utilization is lowest among women in the first quartile and highest among those in the fourth quartile. Again, this is suggestive of relatively powerful substitution effects.

Panel C of Table 3 reports our findings on the association between earnings capacity and utilization for the set of husband-wife units. The figures indicate important non-linearities, which reflect the different patterns exhibited in Panels A and B. In general, the positive element in the female pattern seems to dominate.

Our results concerning the nature of the association between earnings capacity and utilization are consistent both with the theory outlined above and with previous studies in the literature which find relatively strong income effects for men and relatively strong substitution effects for women (Mincer, 1962; Kosters, 1966; Dickinson, 1974). However, our results differ markedly from those of G-H. The authors find a positive association between earnings capacity and utilization for the group of men, and a negative relationship for the group of women. According to our arguments of section B, we expected to find more positive associations in G-H's results than in ours; thus, we are somewhat puzzled by the differences between their findings and our own for females.

E. THE RELATIONSHIP BETWEEN THE DISTRIBUTIONS OF INCOME AND EARNINGS CAPACITY

An important difficulty that arises when trying to compare the distribution of income with that of earnings capacity is that, because the latter is based partly on an imputed variable, its variance is artificially compressed. To alleviate this problem, we use a procedure similar to that employed by G-H: for all those individuals with missing wages, we adjust earnings capacity by

adding to this variable a random number drawn from a normal distribution with zero mean and a standard deviation equal to that of the residuals of the appropriate wage regression.

Table 5 presents the coefficients of variation of income and earnings capacity for the different groups. Comparison of Panels A and B reveals that, for both races, in all periods, male income is more equally distributed than male earnings capacity; the opposite result holds for women. Examining the family distributions, we note that, except for whites, period 2, the female pattern dominates, so that the inequality of income is at least as large as that of earnings capacity.

The following decompositions of the logarithm of income and earnings capacity shed some light on these findings:[3]

(1) $\text{Var}(\ln Y) = \text{Var}(\ln W) + \text{Var}(\ln H) + 2\,\text{cov}(\ln W, \ln H)$

(2) $\text{Var}(\ln E) = \text{Var}(\ln W)$, where

W = wage
H = actual hours of work during year
$Y = W \times H$ = income
$E = W \times 2080$ = earnings capacity.

According to equations (1) and (2), if utilization and productive capacity are positively related, the distribution of actual income will unambiguously be characterized by more dispersion than that of earnings capacity. If utilization and productive capacity are negatively related, which distribution is more unequal depends on the relative magnitudes of $\text{Var}(\ln H)$ and $2\,\text{cov}(\ln W, \ln H)$.

In light of these decompositions, the results shown in Table 5 appear to be consistent with the findings reported in the previous section, which suggest that, albeit interrupted by important non-linearities, a negative element dominates the association between earnings capacity and utilization for men, while a positive element dominates that for women. Thus, for men, the effect

associated with the negative covariance between earnings capacity and utilization outweighs the variance in utilization rates. For women, the findings in Table 5 reflect, in addition to the influences isolated by the above decompositions, the fact that while the distribution of income has many zeros, this is not true of the distribution of earnings capacity. Since the differences between the distributions of female income and earnings capacity are substantially more pronounced than the corresponding differences for men, the female patterns tend to dominate in the comparisons between the family distributions.[4]

F. THE RELATIONSHIP BETWEEN THE DISTRIBUTIONS OF MALE AND FAMILY INCOME

As documented in Table 3, Panel B, female capacity utilization rates vary markedly over the life cycle, reflecting the significant influences exerted by the presence and age of children. In this section, we consider the impact of the market activity of married women at the different stages on the distribution of family income. If the utilization rate of female earnings capacity were zero, the distribution of family earnings would coincide with that of the husband's earnings. As soon as some women enter the labor market, these distributions diverge. The empirical question is which is characterized by less dispersion.

The results in Table 5 indicate that the relationship between male and family earnings inequality, as measured by the coefficient of variation, varies among the two racial groups, and, within each group, among the periods. For whites, the difference in the coefficients of variation is 15.3% in period 1, 4.12% in period 2 and 7.34% in period 3. The corresponding figures for blacks are -1.65%, 3.04% and 7.20%. While the racial difference is extremely pronounced in the first stage, the differences in the second and third periods are minor.

In order to interpret these findings, it is helpful to decompose the squared coefficient of family earnings in the following way:

$$C_T^2 = \alpha^2 C_M^2 + \beta^2 C_F^2 + 2\alpha\beta r C_M C_F ,$$

where Y_T = total family earnings

Y_M = husband's earnings

Y_F = wife's earnings

$\alpha = \bar{Y}_M / \bar{Y}_T$

$\beta = \bar{Y}_F / \bar{Y}_T$

r = correlation coefficient between spouses' earnings

C_T, C_M, C_F = coefficients of variation of total, male and female earnings, respectively.

This equation says that, as one would anticipate, the smaller the variability of male earnings on the one hand and female earnings on the other, the more equal the distribution of family earnings will be. Further, family earnings will have a smaller variability the closer to zero, or the more negative, the correlation coefficient between husband's and wife's income.[5]

The above decomposition indicates that the inequality of family earnings, as measured by the squared coefficient of variation, is not an average of the inequality of male and female earnings. In addition, this equation shows that it is not necessary to have a negative correlation between the spouses' earnings in order for family earnings to be more equally distributed than husband's earnings alone. Indeed, it can easily be verified that if the husband's and wife's characteristics are identical, i.e., $\bar{Y}_M = \bar{Y}_F$, and $C_M = C_F$, the coefficient of variation of family income is always less than that of male (or female) income, except when $r = 0$, in which case they are equal.

Table 6 presents the empirical results of this decomposition, for black and white households separately. Table 7 displays the life-cycle variation of mean incomes, α and β.

Inspection of these tables suggests that the apparent similarity among the racial groups in periods 2 and 3 masks important, countervailing differences. On the one hand, the correlation coefficients between the spouses' earnings are substantially larger and more significant among blacks than among whites. For black, working-wife families, the correlation coefficients are .329 and .366 in periods 2 and 3, respectively; the corresponding figures for white, working-wife households are .181 and .174. The racial difference is even more pronounced when the labor force participation effect is taken into account, i.e., when all families are considered: the correlations for blacks are .291 and .343, while those for whites are .0199 and .0606. This phenomenon tends to make the contribution of white wives more equalizing than that of their black counterparts. On the other hand, the greater labor force involvement of black mothers results in female coefficients of variation which are substantially lower than those of white mothers. While for the former group, the squared coefficients are 4.48 and 1.98 in the child-rearing and post child-rearing stages, respectively, for the latter group they are 1.52 and 1.01. This effect tends to make the contribution of black mothers more equalizing.[6] The net result of these opposing influences is that the magnitude of the improvement in the distribution of family income due to female market activity is about the same for blacks and whites in periods 2 and 3.

The picture for period 1 is rather different. In this stage, the contribution of white wives improves the distribution substantially, while that of black wives actually exacerbates inequality, albeit by a very small amount. To a large extent, this pronounced difference between the two racial groups may be attributed to the fact that the correlation coefficient between the spouses' earnings is markedly higher among blacks; further, the coefficient of variation

of female earnings is also larger in the black group, reflecting in part the lower participation rates of black wives in this interval.

Our study lends support to previous findings in the literature. Using data from the Current Population Surveys of March 1968 and March 1975, Danziger (1978) finds that white working wives improve the distribution by a small amount. For blacks, the effects uncovered are negligible: the 1968 CPS data show that female work improves the distribution slightly, while the 1975 CPS data indicate that female work increases inequality slightly.

A more recent article by Smith (1979), based on data from the 1960 and 1970 U.S. Censuses, contains similar findings. Summing up his conclusions, the author notes that "... wives' earnings have a quite distinct impact between black and white families, reducing measured inequality far more in white families." Smith's article goes one step beyond Danziger's by attempting to explain this racial differential. As Smith points out, the differential reflects, in part, the following factors: "(1) black wives account for a larger proportion of family earnings, (2) the coefficient of variation of black female earnings exceeds those of white females, and (3) covariances in earnings of spouses are positive for blacks and negative for whites." (p. S172)

The present analysis suggests somewhat different reasons for the differential impact of female earnings in the two racial groups. Qualitatively, we agree with Smith's point (3). Our results indicate that the weaker correlation between the spouses' earnings among whites is an important force leading to the greater equalizing impact that white female earnings exert. But we disagree on points (1) and (2). With regard to the first point, we note that although in the child-rearing and post child-rearing periods, black mothers indeed account for a larger proportion of family earnings than do white mothers (i.e., the

values of β are larger among blacks), this factor does not make the contribution of black mothers less equalizing. Indeed, if instead of having $\beta = .24$ and $\beta = .30$ for blacks in periods 2 and 3, respectively, the white weights applied, namely, $\beta = .09$ and $\beta = .15$, it can easily be verified that family income inequality among blacks would change very little, increasing by a small amount in period 3 and decreasing slightly in period 2. With respect to Smith's second point, our study suggests the opposite for periods 2 and 3 (which is where most families are likely to be): since black mothers participate more in the market than their white counterparts, relative inequality is smaller in the former group.

G. CONCLUDING REMARKS AND DIRECTIONS FOR FURTHER RESEARCH

The preceding sections have analyzed the distributions of two statistics: earnings capacity and income. Our work focuses on actual and potential earnings from labor resources only. An important topic for future research is to obtain better estimates of actual and potential ability to command market goods, estimates which include non-labor sources as well. It would also be of interest to add to the analysis the impact of the tax and welfare system.

It should be noted that G-H's notion of earnings capacity is somewhat different from the one used here. G-H try to "purge" earnings capacity of exogenous limitations on employment by defining a corrected earnings capacity, EC^*, as follows:

$$EC^* = EC \left(\frac{50-W}{50}\right), \text{ where}$$

EC = uncorrected earnings capacity.

W = weeks not worked due to sickness, disability or unemployment

In our data, we do not have information on W, so we cannot use this procedure. The question still remains, however, as to whether this approach is desirable. In

one sense it is: if an individual does not work because he cannot find an acceptable job, then his earnings capacity is not a good indicator of his ability to command goods in the marketplace. But, on the other hand, unemployment is usually a transitory phenomenon, and if one performs this adjustment, earnings capacity becomes subject to some of the same shortcomings which characterize the income concept. In addition, theoretically W should also include other constraints, such as weeks of work lost due to discrimination in employment, or because adequate child care could not be found. W could conceivably equal 50 for many women, if considerations such as these could be taken into account.

Is a partially corrected EC better than a non-corrected EC? Perhaps it is preferable to leave EC uncorrected and then argue that the distributions of income and earnings capacity serve as brackets for the distribution of economic status, in the narrow sense used in this paper. If variations in constraints play a larger role than variations in labor supply decisions, income is the more meaningful indicator; if the opposite is true, earnings capacity is the better measure.

If we consider the group of married women in the American society, variations in labor market behavior probably reflect mostly voluntary decisions; however, the impact of exogenous constraints should not be underestimated. Lack of job opportunities, discrimination in employment, and unavailability of suitable child care arrangements substantially limit the possibilities women have of realizing their potential earnings to the extent desired. A recent study by Presser and Baldwin (1980) reports that close to one out of five mothers with pre-school age children say they would enter the labor force if adequate child care were available. With regard to men, it is well known that many fail to achieve the utilization rates they desire due to unemployment, strikes and

illness. A study based on the 1976 Wave of the Panel Study of Income Dynamics indicates that more than a fifth of male heads of households reported wanting more work than they could get (Morgan, 1979). Nevertheless, males probably face fewer constraints on employment than females. In the traditional household, the presence of young children does not pose an obstacle to the market activity of fathers. In addition, there is no discrimination problem for the group of white males. On the other hand, there is also a tendency, in the traditional household, for husbands to desire full-time or close to full-time employment. Thus, while exogenous limitations probably play the dominant role for the group of males, both variations in preferences and constraints appear to be less important among husbands than among wives. These arguments are largely speculative; further research designed to quantify more precisely the various effects described here would be very desirable.

The present paper focuses on only one dimension of fertility, namely, the presence and age of children in the household. An interesting extension of this research would be to examine the impact family size has on the distributions of female and family income and earnings capacity. If the households in the child-rearing and post child-rearing periods are divided into various groups according to the number of children in the family, how much of the inequality of male, female and total earnings (actual and potential) is accounted for by dispersion within fertility groups as opposed to variation among fertility groups? A question which is considerably more difficult to address is: How do fertility, female labor supply, and the distributions of family income and earnings capacity interact? An analysis of these four variables in the context of a simultaneous-equations model is an intriguing topic for future research.

TABLE 1: WAGE REGRESSIONS FOR MEN*

	WHITE			BLACK		
	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3
Constant	.004754 (.1848)	-.1864 (.07919)	.2748 (.1852)	.5874 (.2947)	.1784 (.1705)	.6926 (.3396)
Education	.05722 (.01292)	.07498 (.005177)	.06218 (.006934)	.03912 (.02487)	.05714 (.01145)	.05414 (.01458)
Experience	.05226 (.009978)	.05126 (.005528)	.03062 (.01275)	.04537 (.01618)	.01938 (.008608)	-.009055 (.01987)
Experience Squared	-.0008195 (.0002919)	-.0009997 (.0001636)	-.0004810 (.0002622)	-.001096 (.0004543)	-.0002968 (.0002361)	.0001042 (.0003721)
Median income earned in occupation	.04079 (.01433)	.04073 (.006777)	.03124 (.008710)	.006950 (.02695)	.04209 (.01363)	.04021 (.01954)
Residence in South	-.09360 (.05552)	-.07653 (.02678)	-.07656 (.03547)	-.1844 (.1010)	-.1828 (.05096)	-.1845 (.07731)
Residence outside a SMSA	-.1401 (.05893)	-.1332 (.02676)	-.2659 (.03583)	.07404 (.1256)	-.04420 (.06417)	-.1383 (.1032)
R^2	.1184	.2347	.1853	.09239	.07526	.1319
Number of Cases	693	2097	1402	175	980	420

*Standard errors in parentheses

TABLE 2: WAGE REGRESSIONS FOR WOMEN*

	WHITE			BLACK		
	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3
Constant	-.6145 (.1663)	-.5402 (.1623)	-.2380 (.1527)	-.2942 (.3528)	.003498 (.1847)	-.3242 (.2192)
Education	.07433 (.01384)	.05382 (.01454)	.05808 (.01273)	.06596 (.03346)	.04520 (.01692)	.06437 (.02017)
Special Education	.2373 (.07306)	.1556 (.07594)	.1930 (.07009)	.2560 (.1316)	.1260 (.07754)	.2317 (.1032)
Experience	.03350 (.01021)	.007537 (.006697)	.01292 (.004634)	.01426 (.01819)	.01188 (.004972)	.01473 (.005878)
Median income earned in occupation	.1238 (.02289)	.1811 (.02508)	.1023 (.02342)	.1240 (.05600)	.1026 (.02960)	.1293 (.03470)
Residence in South	-.09243 (.05366)	-.08567 (.06338)	-.01568 (.05707)	-.1805 (.1197)	-.1599 (.06612)	-.3286 (.09014)
Residence outside a SMSA	-.07945 (.05567)	.01107 (.06174)	-.2256 (.05542)	.1399 (.1754)	-.3017 (.07779)	.005140 (.1187)
R^2	.2421	.1623	.1379	.2346	.1445	.2723
Number of Cases	538	728	779	115	581	312

*Standard errors in parentheses

TABLE 3: THE RELATIONSHIP BETWEEN EARNINGS CAPACITY AND UTILIZATION*

PANEL A: MARRIED MEN						
	WHITE			BLACK		
Earnings Capacity	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3
First quartile**	106	119	128	105	98	98
Second quartile	99	112	116	97	97	96
Third quartile	98	109	111	106	102	102
Fourth quartile	89	103	108	81	84	91

PANEL B: MARRIED WOMEN						
	WHITE			BLACK		
Earnings Capacity	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3
First quartile	53	17	24	37	39	64
Second quartile	78	28	47	56	40	63
Third quartile	77	18	45	55	51	69
Fourth quartile	82	23	49	71	66	79

PANEL C: FAMILIES						
	WHITE			BLACK		
Earnings Capacity	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3
First quartile	79	71	82	68	68	85
Second quartile	86	79	90	81	74	83
Third quartile	95	80	89	88	85	88
Fourth quartile	89	82	93	83	83	89

Number of cases	705	2124	1429	178	1019	446

*Utilization is computed as $\frac{\text{Actual Income}}{\text{Earnings Capacity}} \times 100$

**The quartiles correspond to the distribution of earnings capacity for blacks and whites combined. Each period generates a different distribution.

TABLE 4: THE LABOR SUPPLY OF MARRIED MEN

	WHITE			BLACK		
	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3
Percentage of men who worked (in primary job):						
Less than 2080 hours	36.5	22.3	16.4	30.3	28.9	23.5
2080 hours	32.1	38.0	40.4	43.8	51.5	57.6
More than 2080 hours	31.5	39.6	43.2	25.8	19.6	18.8
Percentage of men who held a secondary job	25.4	18.8	12.5	12.4	14.0	8.5

TABLE 5: COEFFICIENTS OF VARIATION OF INCOME AND EARNINGS CAPACITY

PANEL A: INCOME

	WHITE			BLACK		
	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3
Husband's Income	.724	.668	.650	.541	.701	.719
Wife's Income	.795	2.12	1.41	.888	1.23	1.00
Husband's Income plus Wife's Income	.621	.641	.604	.550	.680	.669

PANEL B: EARNINGS CAPACITY

	WHITE			BLACK		
	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3
Husband's Earnings Capacity	.764	.915	.756	.606	.795	.918
Wife's Earnings Capacity	.459	.595	.514	.421	.511	.566
Husband's Earnings Capacity plus Wife's Earnings Capacity	.543	.671	.576	.438	.556	.669

Table 6: Decomposition of the Squared Coefficient of Variation*

PANEL A: WHITE FAMILIES

	C_T^2	α^2	C_M^2	$\alpha^2 . C_M^2$	β^2	C_F^2	$\beta^2 . C_F^2$	r (p-value in parentheses)	$\alpha . \beta$	$C_M . C_F$	$2r\alpha\beta C_M C_F$	N
Period 1	.386	.46	.524	.241	.10	.632	.0632	.316 (.001)	.218	.576	.0794	705
Period 2	.411	.83	.447	.371	.0081	4.48	.0363	.0199 (.359)	.0819	1.42	.00463	2124
Period 3	.365	.72	.423	.305	.0225	1.98	.0446	.0606 (.022)	.127	.916	.0141	1429

PANEL B: BLACK FAMILIES

	C_T^2	α^2	C_M^2	$\alpha^2 . C_M^2$	β^2	C_F^2	$\beta^2 . C_F^2$	r (p-value in parentheses)	$\alpha . \beta$	$C_M . C_F$	$2r\alpha\beta C_M C_F$	N
Period 1	.302	.49	.293	.144	.09	.789	.0710	.430 (.001)	.210	.480	.0867	178
Peripd 2	.463	.58	.492	.285	.058	1.52	.0882	.291 (.001)	.182	.862	.0913	1019
Period 3	.448	.49	.517	.253	.09	1.01	.0909	.343 (.001)	.210	.719	.104	446

*The terms of equation (2) may not exactly add up to C_T^2 due to rounding errors.

TABLE 7: THE LIFE CYCLE VARIATION OF MEAN INCOMES, α and β

PANEL A: WHITE FAMILIES

	$\bar{Y}_T$	$\bar{Y}_M$	$\bar{Y}_F$	α	β
Period 1	13,474	9,169	4,305	.68	.32
Period 2	12,521	11,430	1,091	.91	.09
Period 3	16,317	13,890	2,427	.85	.15

PANEL B: BLACK FAMILIES

	$\bar{Y}_T$	$\bar{Y}_M$	$\bar{Y}_F$	α	β
Period 1	11,803	8,238	3,565	.70	.30
Period 2	10, 157	7,738	2,419	.76	.24
Period 3	12,401	8,634	3,767	.70	.30

FOOTNOTES

[1] G-H also include income from non-employment sources in their definition; however, this is neglected in many of their analyses. All the work reported in this paper abstracts from non-labor income. The terms "income" and "earnings" are used interchangeably throughout.

[2] The square of experience is omitted, since this variable was always insignificant in preliminary regressions.

[3] These decompositions are helpful in that they illuminate the role played by the association between earnings capacity and utilization in the relationship between the inequality of income and earnings capacity; however, these decompositions cannot be implemented empirically, unless the numerous cases in which H is zero are eliminated.

[4] G-H's findings and our own may not be compared in this respect, since they only present results on the relationship between pre-transfer income and earnings capacity for the entire population, while we focus on the association between actual earnings and earnings capacity for the married population.

[5] Assuming monotonicity, the sign of cov (Y_M, Y_F) is the same as that of cov $(\ln Y_M, \ln Y_F)$. We can express $\ln Y_F$ as $\ln W_F + \ln H_F$, where W_F is the wife's wage and H_F is the number of hours she works in the market in the year under consideration. We do not decompose $\ln Y_F$, under the assumption that most husbands work full time. Thus:

$$\begin{aligned}\text{cov } (\ln Y_M, \ln Y_F) &= E\ (\ln Y_M \ln W_F) + E\ (\ln Y_M \ln H_F) - E\ (\ln Y_M)\ E\ (\ln Y_F) \\ &= \text{cov } (\ln Y_M, \ln W_F) + \text{cov } (\ln Y_M, \ln H_F)\end{aligned}$$

It follows that family earnings will tend to be more equally distributed than husband's earnings (a) the more negative, or the less positive, the association between husband's earnings and wife's wage, and (b) the more negative the association between husband's earnings and female labor supply.

[6] These differences are somewhat less pronounced when only working wives are considered. The squared coefficients of variation for periods 2 and 3 in this case are 1.12 and .832 for whites, and .580 and .534 for blacks.

[7] The actual values of C_T^2 for blacks in periods 2 and 3 are .463 and .448, respectively. If the values of α and β for whites in these periods held for blacks, all other factors remaining unchanged, the figures for C_T^2 would be .462 and .458. In order to explain this finding, note that, as indicated in the text, $C_T^2 = \alpha^2 C_M^2 + \beta^2 C_F^2 + 2\alpha\beta r C_M C_F$. Since empirically r is not equal to 0, α and β play a role not only through the first two terms (which indicate the contributions of male and female inequality to the dispersion of pooled earnings), but also through the third term, which captures the correlation effect.

REFERENCES

Danziger, S. (1978). "Do Working Wives Increase Family Income Inequality?" Discussion Paper #418-78, Institute for Research on Poverty, University of Wisconsin.

Dickinson, J. (1974). "Labor Supply of Family Members." Pp. 177-250 in J. N. Morgan, K. Dickinson, J. Dickinson, J. Benus and G. Duncan (eds.), Five Thousand American Families - Patterns of Economic Progress, Vol. 1. Ann Arbor: Institute for Social Research.

Garfinkel, I. and Haveman, R.H. (1977). Earnings Capacity, Poverty and Inequality. New York: Academic Press.

Harrison, B. (1972). "Education and Underemployment in the Urban Ghetto." American Economic Review. Vol. 62, pp. 796-812.

Heckman, J. (1976). "The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for Such Models." Annals of Economic and Social Measurement, Vol. 5, Part 4, pp. 475-492.

Kosters, M.H. (1966). "Income and Substitution Effects in a Family Labor Supply Model." Unpublished Ph.D. dissertation, University of Chicago.

Lehrer, E. and Nerlove, M. (1980). "Women's Life-Cycle Time Allocation: An Econometric Study." Pp. 149-168 in S.F. Berk (ed.), Women's Policy Studies Annual Series. Vol. 5. Beverly Hills: Sage Publications.

Mincer, J. (1962). "Labor Force Participation of Married Women: A Study of Labor Supply." Pp. 63-105 in National Bureau of Economic Research, Aspects of Labor Economics. Princeton: Princeton University Press.

Moreno, R. (1978). "The Distribution of Income and Economic Well-Being in the United States, 1968-1971." Unpublished Ph.D. dissertation, Northwestern University.

Morgan, J.N. (1979). "Hours of Work by Family Heads: Constrains, Marginal Choices, and Income Goals." Pp. 65-99 in G.J. Duncan and J.N. Morgan (eds.), Five Thousand American Families - Patterns of Economic Progress, Vol. VII. Ann Arbor: Institute for Social Research.

Presser, H.D. and Baldwin, W. "Child Care as a Constraint on Employment: Prevalence, Correlates, and Bearing on the Work and Fertility Nexus." American Journal of Sociology, Vol. 85, No. 5, Part 2, pp. 1202-1213.

Sirageldin, I. (1969). Non-Market Components of National Income. Ann Arbor: University of Michigan, Survey Research Center.

Smith, J. (1979). "The Distribution of Family Earnings." Journal of Political Economy, Vol. 87, No. 5, Part 2, S163-S192.

Taussig, M. (1973). Alternative Measures of the Distribution of Economic Welfare. Princeton: Princeton University, Industrial Relations Section.