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AN ECONOMETRIC ANALYSIS OF THE FERTILITY AND LABOR SUPPLY OF UNMARRIED WOMEN

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A. INTRODUCTION

The number of female headed households has risen dramatically during the current decade, from 5.6 million in 1970 to 7.5 million in 1976, an increase of one third. By 1977, nearly 1 of every 7 families was headed by a woman. The major factor responsible for this phenomenon has been the striking increase in the divorce rate. This climbed from 2.6 per 1,000 population in 1950, to 3.6 in 1970 and to 5.1 in 1977. Underlying this increase are the rising social acceptability of divorce; new, liberalized laws in this field, and, perhaps very importantly, the new independence women have found through their increased participation in the labor market. The rising number of single women who have children and keep them has been another important element behind the increase in the number of female headed families.

An understanding of the time allocation patterns of unmarried women is of great importance. Households headed by females are heavily represented among the ranks of the poor. Further, as the proportion of families without a father has increased, so has the number of children living in this type of household. In 1970, 1 of 10 children lived in a female headed home; by 1977, this figure had risen to 1 of 6 children.[1]

To date, little work has been done in this area. Some cross-tabulation analyses have been reported in various Monthly Labor Review issues. (See Grossman, 1977, 1978, for example.) Although these studies represent a

useful beginning, uncovering important trends, more elaborate models are required to isolate the underlying links among socio-economic variables, fertility and labor supply. In this paper, we extend previous analyses by estimating a multi-period model of the fertility and labor supply behavior of widowed, divorced, separated and single mothers, similar to that we have estimated for married women (Lehrer and Nerlove, 1980).

Our paper on the time allocation of married women emphasizes the importance of dividing the life cycle into various stages for the analysis of fertility and labor supply. We suppose the typical woman to go through the following stages: Period 1A is the pre-marriage stage, which begins when the individual reaches age 6; period 1B is the interval between marriage and first birth; period 2 is the child-rearing stage, and period 3 is our final stage, which begins when all children have reached school age and ends when the mother reaches the age of retirement. Using data from the 1973 National Survey of Family Growth, we estimate a system of reduced-form equations, with fertility and female labor supply in the specified periods as our endogenous variables. Our main exogenous variables are the husband's permanent income and the wife's education. Our two principal findings are: (a) The impact of exogenous variables on labor supply varies markedly over the life cycle. Most significantly, while the husband's income has no impact on female work prior to the birth of the first child, it strongly depresses the wife's labor supply thereafter. In addition, our results indicate that the wife's education has a more pronounced, positive effect on her market activity in the

interval between marriage and first birth than in subsequent stages. This finding is consistent with the hypothesis that the greater the mother's human capital the greater the efficiency of the time she spends on child services. (b) Analysis of the correlations among the dependent variables shows that the nature of the association between fertility and female work varies over the life cycle. While the relationship is negative in the child-rearing stage,it becomes positive,though very weakly so, in the post child-rearing period. We interpret this result as reflecting the fact that children are very time intensive in the second period, but become more goods intensive when they reach school age.

The same body of data and a similar framework of analysis are used in our present study on the time allocation of unmarried women. Given the findings reported above, it seems important to estimate a model which allows for the possibility that the impact of exogenous variables on unmarried women's labor supply may change over the life cycle, as well as the possibility that the relationship between fertility and female employment may vary in sign or significance.

We study two major groups of unmarried women separately. The first consists of post-married women: divorced, separated and widowed women. The second group consists of single mothers, i.e., women with children who have never had a husband.

For the first group, we retain the distinction among periods 1A, 1B, 2 and 3. For single women, we could, in theory, consider a combined period 1, from age 6 to the birth of the first child. We are forced to neglect this stage, however, since our data do not contain information on the labor

supply of single mothers prior to the date of the first birth.

There is one important difference between our model for married women and that for their unmarried counterparts. In the former, our underlying econometric framework is a simultaneous equations system, with fertility and female labor supply in each of the various periods jointly determined. (The corresponding reduced-form equation system is estimated.) According to this model, a woman jointly decides, say, to have a large family and to supply a relatively small amount of labor to the market in the child-rearing period. For the group of post-married women, this view of the process seems inadequate. A post-married woman may have, indeed, planned at an early stage to have many children and to devote most of her lifetime to home activities. However, at some point, usually during the child-rearing or post child-rearing stage, an unforeseen event occurs: the dissolution of marriage, by divorce, separation or death of the spouse. At this point, the woman finds herself with a given stock of children, education and work experience, a given flow of income from non-employment sources, and, faced with these circumstances and her own preferences, she must decide how much labor to supply to the market. These arguments suggest a recursive econometric model.[2]

The case of single mothers is especially difficult. Is their behavior closer to that of married women or to that of post-married women? Can we think of a single woman as jointly planning her labor supply and fertility, or is it more reasonable to assume that first she has one or more unplanned children, and afterwards she adjusts her labor

market behavior accordingly? These are complex questions which the present paper does not attempt to answer. Recognizing the difficulties involved, we treat single mothers in the same manner as post-married mothers.

B. DATA AND VARIABLES

In this section, we present a brief description of the data and the variables employed in our model.

The Data.

The 1973 National Survey of Family Growth was addressed to civilian, non-institutionalized women living in the United States, who, at the time of the survey, were currently married, previously married or single with natural children living in the household. It contains pregnancy, contraceptive, marital and female employment histories, as well as information on health and family planning, religion, child care, location and a number of socio-economic variables. Blacks were oversampled.

The total sample size is 9,797. After eliminating those respondents whose race was neither white nor black, those post-married women who had a child prior to marriage and those who had no children, the sample sizes for post-married and single women are, respectively, 979 and 626. Some of our regressions are based on slightly smaller samples, since cases with missing or invalid codes on relevant variables were also eliminated.

Definitions of Variables

Our endogenous variables are the level of female labor supply in the various periods and the household's fertility. Our main independent

variables are the wife's education, and the former husband's (if any) education, our proxy for his permanent income. In addition, we include a number of background, religion, biological, economic and demographic variables. Some of these variables control, partially, for preferences and for the economic opportunities faced by the woman. We define briefly each of these variables below.

Female Labor Supply Variables: L1A, L1B, L2, L3. These variables indicate the proportion of time the woman worked in the market in the corresponding period. For example, if period 2 lasted eight years, and the respondent reports that she worked four years in that time interval, L2 would be .50.[3] Unfortunately, the survey contains no indication as to whether the woman engaged in part-time or full-time market activity during the years in which she was employed.

Fertility Variable: NUM. This is defined as the number of live births reported by the respondent.

Woman's Education: WEDUC, WED1. We use two variables to represent the woman's education. WEDUC indicates the number of years of regular schooling she completed. WED1 is a dummy variable which equals 1 if she had some other training, such as technical education.

Former Husband's Education: HEDUC. We use the former husband's education, measured in years of regular schooling, as our proxy for his permanent income. A variable analogous to WED1 is not available for husbands.

Other Income: OTHINC. This variable indicates the respondent's income, at the time of the survey, from interest, dividends, rent, alimony and child support. Welfare payments are not included. OTHINC is measured in thousands of dollars.

Average AFDC payment in region: AFDC. In order to ascertain the impact of the level of payments under Aid to Families with Dependent Children on the labor supply of unmarried mothers, we calculated the average AFDC payment per recipient for each of four regions: North-East, North-Central, West and South. The resulting figures, based on data from Public Assistance Statistics, May 1973, Table 7, were $74.76, $57.22, $60.81 and $32.16, respectively.[4]

Marital Status: WIDOWED, DIVORCED. These are dummy variables which take the value 1 if the marriage ended through the husband's death, or through divorce, respectively. Dissolution of marriage through separation is the base.

Background Variables: SOUTHC, LIVPAR, SIBL1 SOUTHC is a dummy variable which equals 1 if the respondent lived in one of the southern states most of the time during her childhood and adolescence. LIVPAR is a dummy variable which takes the value 1 if at the age of 14 the respondent was not living with her own mother and father, due to death, separation, divorce or some other reason. Finally, SIBL1 is the number of siblings in the woman's family plus 1, i.e., the total number of children in her home.

Religion Variables: RELED, CATH. RELED is a dummy variable which takes the value 1 to indicate that the respondent received at least some of her education in a religious school. CATH equals 1 if she is Catholic.

Biological Variable: SUBF. SUBF equals 1 if the woman reports it would be physically difficult or impossible for her to have another child, provided she had not reached the age of menopause, and had not had an operation for contraceptive purposes.

Duration of marriage variables: DUR, DUR2, DUR3. DUR indicates the number of years the woman spent in union with a husband. If the woman married more than once, DUR is calculated as the summation of the durations of all the marriages. DUR2 is the proportion of the child-rearing period during which the woman's status was married. DUR3 is defined similarly for the post child-rearing period.

Demographic Variables: AGE, RACE. AGE is a continuous variable which controls for the wife's age at the time of the survey. RACE equals 1 if the respondent is black, and is 0 if she is white.

Residence Variables: SOUTH, SMSA. SOUTH is a dummy variable which takes the value 1 if the respondent lives in the South; SMSA equals 1 if she lives outside a Standard Metropolitan Statistical Area.

C. THE ECONOMETRIC MODEL

Our model for the analysis of the fertility and labor supply of post-married women is the following:

$L1A = f_1$ (Woman's education, background and demographic variables)

$L1B = f_2$ (Woman's education, husband's education, background and demographic variables)

NUM = f_3 (L1A, L1B, woman's education, husband's education, religion and biological variables, marital status, background variables, residence, duration of marriage, demographic variables)

L2 = f_4 (L1A, L1B, NUM, woman's education, husband's education, other income, average AFDC payment in region, marital status, residence, duration of marriage, demographic variables)

L3 = f_5 (same variables as those included in L2 equation)

The first three equations are estimated using data on all the post-married mothers. The L2 and L3 equations are estimated using the sub-sample of women in periods 2 and 3, respectively.[5]

At a preliminary stage of the analysis, we attempted to estimate the L2 and L3 equations separately for two sub-samples. One consisted of all those women whose last marriage was dissolved in period 2; the other consisted of all those respondents whose last marriage was dissolved in period 3. By means of this procedure, we hoped to isolate differences in the labor supply of women whose marital unions ended at different stages of the life cycle. Unfortunately, the resulting sample sizes were very small, leading to large standard errors and analyses in which the effects of many important variables were obscure.

Thus, with the present data, the best we can do is to control for the fraction of the period which each woman spent in union with a husband in the L2 and L3 equations. We include DUR2 in the L2 equation and DUR3 in the L3 equation. Our a priori expectation is that these variables will have negative coefficients, reflecting the economic handicap which the absence of a husband implies.

For single mothers, our model is reduced to the equations for NUM, L2 and L3. The specification of the fertility and labor supply functions is the same, except that the variables on husband's education, marital status, duration of marriage, and labor force activity prior to the birth of the first child, are excluded.

The labor supply equations are estimated by the Tobit procedure, which deals with the truncation of the dependent variable at 0. Many respondents did not participate in the labor market at all during the various periods. The fertility equations are estimated by Ordinary Least Squares.

Our empirical findings are discussed below. We take up the five equations in order, comparing where possible, the results for post-married and single women. Comparisons are also drawn between the present findings and our earlier results on married mothers.

Labor Supply in Periods 1A and 1B

Table 1 presents the labor supply equations for the pre-marriage period and for the interval between marriage and first birth. Since the present paper deals with the behavior of unmarried women, it might seem unnecessary to consider these equations. We do so, however, because we believe it is of interest to ascertain whether women whose marriages are subsequently dissolved behave differently, while in the married status, than do their counterparts who remain married. For the same reason, we estimate a fertility equations for post-married women. Even though most post-married women had their children while in the married status, it is still of interest to compare the impact of exogenous variables on their fertility with our results for women engaged in more permanent unions.

Confirming our previous results for married women, the coefficient of WEDUC is positive in both the L1A and the L1B equations, but only significant in the latter. The lack of significance of WEDUC in the L1A equation may be attributed to the fact that, at least in part of period 1A, investment in formal education and participation in the labor market are competing activities. The coefficient associated with WED1 is also positive in both periods, but its impact is weak. The effect of husband's education, our proxy for his permanent income, is not significant in period 1B. This agrees with our findings for married women, which show that the husband's income has no influence on female market activity when children are not present.

Residence in the South during childhood has a weak, negative influence on L1A, and no impact on L1B. LIVPAR has a positive coefficient in the L1A and L1B equations, but is only significant in the latter. Presumably, girls who lost a parent or whose parents dissolved their marriage, receive less financial help and are thus induced to work more in the market. It is

puzzling, however, that while this effect is very pronounced in the interval between marriage and first birth, it is insignificant in the earlier stage. As expected, SIBL1 affects labor supply in period 1A positively, though not strongly so. The greater the number of siblings, ceteris paribus, the greater the economic pressure the woman faces to enter the labor market. This effect disappears after the marriage. AGE has a strong, positive effect on L1A, and a weak, positive impact on L1B.

Table 2 exhibits the labor force participation patterns of post-married and married women by race in periods 1A and 1B. The figures indicate the percentage of cases in which the labor supply variables, L1A and L1B, are greater than zero.

Examining first the group of post-married women, we note that whites display a substantially larger labor force participation rate than blacks in both periods. For the white group, the percentage of observations with a positive level of labor supply is 77% in period 1A and 57% in period 1B. The corresponding figures for the black group are 62% and 44%. Interestingly, the variable RACE is not significant in either the L1A or the L1B equation. Thus, when education, age and other relevant variables are held constant, the two race groups do not differ significantly in their labor supply behavior. A similar finding holds for married women. Whites participate more than blacks, as shown on Table 2, but when other factors are held constant in a Tobit regression, no race effect remains.

A comparison between the figures for married and post-married women shows that, within each race group, the participation rates are very similar.

Fertility

Table 3 displays our fertility equations for post-married and single women. In both groups, WEDUC exerts a strong, negative impact on fertility; an additional year of regular schooling decreases the number of children by

about 0.2. The effect is approximately twice as large as the one we found for married women.[6] The coefficient of WED1 is insignificant in the equation for post-married women, but strongly negative in the group of single women (as well as in the group of married women.) HEDUC, the variable we use to indicate the former husband's permanent income, strongly depresses the fertility of post-married women. Interestingly, the magnitude of the effect is very similar to the one corresponding to married women, in spite of the fact that a somewhat different variable is employed in the latter group. Work experience before marriage has a negative impact on the number of children of post-married women; the effect of L1B is insignificant.

The religion variables have no effect on the fertility of post-married and single women. This contrasts sharply with the significant coefficients associated with these variables in the fertility equation for married mothers. This result is not surprising, since unmarried women have revealed themselves to be among those less restricted by traditional norms.

While physical limitations, as indicated by SUBF, play an important role in the fertility of married women, the present results show that SUBF has only a weak, negative impact on the fertility of post-married women, and no effect on the fertility of single women. We speculate that this finding reflects the fact that unmarried women have fewer chances of hitting a subfecundity constraint, given the dissolution of marriage, in the case of post-married women, and the absence of a husband, in the case of single women.

The coefficients of the marital status variables are not significant. Holding education, age, duration of marriage and other relevant factors constant, fertility behavior does not vary among widowed, divorced and separated women.

Residence in the South during childhood has no effect on the number of children of post-married women, but a strong positive impact on the fertility

of single mothers. LIVPAR has a strong, positive effect on NUM in the group of post-married mothers, but no influence in the set of single mothers. SIBL1 affects the fertility of single women positively, but not strongly so; it has no effect on the fertility of the other group. Residence in the South at the time of the survey appears to have little or no effect in NUM. SMSA has a strong positive coefficient, as expected, in the group of post-married women; the weakly negative coefficient associated with this variable in the group of single women is a puzzling result.

The duration of marriage affects the fertility of post-married positively and very markedly. This is as expected, since this variable measures, to some extent, the woman's exposure to the risk of conception. The effect of age is also positive and strong, in both groups. Finally, RACE has a pronounced, positive impact on the fertility of post-married women; black mothers who are divorced, separated or widowed tend to have more children than their white counterparts. The magnitude of the RACE coefficient is similar to that we obtained for married women. The race variable is omitted from the equation for single mothers, since the great majority (93%) in this group is black in our sample.

Labor Supply in Periods 2 and 3

Table 4 presents the labor supply equations for the child-rearing and post child-rearing periods, for the groups of post-married and single women. As expected, WEDUC and WED1 exert a strong, positive influence on L2 and L3 in both groups. Interestingly, the effects are larger in the set of single women: an additional year of regular schooling increases the labor supply of single women in periods 2 and 3 more than it increases that of post-married mothers in these stages. WED1 also has a larger effect among single mothers than among post-married women, although the difference is only pronounced in the post child-rearing period.

In order to interpret these findings, we note that, to the extent that schooling is positively associated with the market wage, an increase in education gives rise to the traditional substitution and income effects. On the one hand, as leisure and home time become more expensive, there is an incentive to supply more labor to the market. On the other hand, a given level of labor supply yields higher earnings, hence the woman can afford to work less for pay.

As emphasized by Leibowitz (1975), education is also associated positively with non-market productivity; in particular, more educated mothers tend to be more efficient in the production of child services. This gives rise to a third effect, which we have elsewhere called a "child effect": as education increases, it becomes optimal for the mother to spend more time on her children (Lehrer and Nerlove, 1980). Thus , female educational attainment will affect labor supply positively if the substitution effect outweighs the income and child effects; the magnitude of the net impact depends on the relative strengths of the three influences.

The fact that the coefficients associated with female education in periods 2 and and 3 are smaller among post-married women than among never-wed mothers may be interpreted as reflecting relatively large child and income effects in the former group. A comparatively large child effect among post-married women may result from the higher level of complementary resources typically available in their households. On the other hand, the fact that post-married women supply considerably more labor to the market

than single women, as documented below, may lead to a relatively large income effect in the former group, since the magnitude of the income effect associated with a wage change is a positive function of the level of labor supply. The intuitive interpretation of this result is that if a woman is supplying, say, a very small amount of labor, then the amount of enrichment caused by a wage increase will, likewise, be small. (For a mathematical analysis which implies this proposition, see Kogiku, 1971, pp. 34-36)

Another interesting finding with regard to female education is that among post-married mothers, the impact of this variable on employment is substantially larger in the period between marriage and first birth than in the two subsequent stages. The coefficient of WEDUC is approximately four times larger in the L^{1B} equation than in the L2 and L3 equations.[7] A similar result appears in our previous paper on the labor supply of married women. One possible explanation for this finding is that there is a significant child effect, that is, an increase in the mother's human capital indeed raises the efficiency of the time she devotes to child services.

We expected OTHINC, the income from alimony, child support, interest and other non-employment sources to have a strong, depressing impact on labor supply. The data only confirm this result for the case of post-married women in the third stage.

The average AFDC payment per recipient, which partially captures the woman's opportunities to obtain income outside of the labor market, has a very significant negative effect in all cases, except for post-married women in period 3, in which the influence is negative, but not significant.

For the case of post-married women, period 2, an increase in the monthly payment of $10 decreases the proportion of time devoted to the labor market by approximately .03. The corresponding figure for single women, in both periods, is somewhat larger, about .05.

With respect to HEDUC, our final income variable in the post-married equations, its effect is strongly negative in the child-rearing stage, as it also was in the case of married women. This influence disappears in the final stage. This is due, most likely, to the fact that a large fraction of the marriages are dissolved during the child- rearing period. Any influence of the husband's earning power thereafter is picked up by OTHINC, which includes alimony and child support payments. As noted earlier, the coefficient associated with this variable is strongly negative for the group of post-married women in period 3.

Since work experience is a form of human capital, we expected to find a positive impact of L1A and L1B on L2 and L3. Our regressions support this hypothesis partially; the results suggest only a strong, positive impact of $L1A$ on L2. With respect to the impact of the number of children on labor supply, NUM has a strong negative effect on L2 and a negative, but statistically insignificant effect on L3, for the case of post-married women. The pattern is somewhat similar to the one we uncovered for married women; in their case, we found a strong negative association between fertility and labor supply in the child-rearing period, and a very weakly positive one in the post child-rearing interval. Surprisingly, our regressions for single women indicate that NUM has an insignificant coefficient in the L2 equation and a weakly negative one in the L3 equation. While the latter result may reflect

the positive association between AFDC payments and family size, the former remains a puzzle.

Log-likelihood ratio tests indicate that the marital status variables are significant in periods 2 and 3 at the 0.01 level. Holding all relevant, observable factors constant, among the group of post-married women, divorced women tend to display the highest level of labor supply in the child-rearing period, and widows, the lowest level in the post child-rearing period.

The duration of marriage variables are, disappointingly, not significant. Residence outside a SMSA appears to have little impact on labor supply. AGE has a positive influence on L2 but no impact on L3, for both groups of unmarried women.

Table 5 displays the labor supply patterns by race in periods 2 and 3, for post-married, single and married women. The figures for white, single women are included for completeness, but they are ignored in our discussion, since they are based on very small sample sizes.

The percentage of cases in which the level of labor supply is positive is 80% in period 2 and 88% in period 3, for the group of post-married women. The corresponding rates are 68% and 75% for single mothers, and 54% and 74% for married mothers. Thus, regardless of marital status, mothers' labor force participation is less in the child-rearing than in the post child-rearing stage. The difference in the level of labor supply between these two periods is most pronounced among married women.

Finally, it is interesting to note that while black, married mothers work substantially more than their white counterparts, a difference which remains statistically significant when other variables are held constant, the same is not true for the post-married group. Black and white post-married women exhibit very similar participation rates in the child-rearing and post child-rearing stages. This finding may be interpreted in light of the fact that the

unemployment rates for black men are relatively high, a factor which influences the labor supply behavior of married, black females, but has no impact, clearly, on that of unmarried women. We hypothesize that if our data enabled us to control for the "added worker" phenomenon, very little race effect, if any, would remain.[8]

D. SUMMARY

Our paper on the time allocation of married women (Lehrer and Nerlove, 1980) emphasizes the importance of dividing the life cycle into various stages for the analysis of female labor supply and fertility. The present study confirms the need for a multi-period model for the case of unmarried women as well. We find, as was true for married mothers, that the relationship between fertility and female employment varies across the life cycle stages; the pattern uncovered for post-married women is similar to that of married women, but a completely different picture emerges for single women.

Another important finding is that the impact of some exogenous variables on the labor supply of post-married mothers changes over the life cycle, in the same direction as for married mothers. This paper shows that for the group of widowed, divorced and separated women, the impact of female education on labor supply is substantially larger in the interval between marriage and first birth than in the subsequent stages. Further, while the former husband's income has no influence on the woman's market activity prior to the birth of the first child, it has a marked negative effect in the child-rearing period. In the post child-rearing stage, a variable which controls for other income sources, including alimony and child support, exerts a strong negative influence on female employment.

While our analysis uncovers many similarities in the fertility and labor supply behavior of married and unmarried women, important differences also

appear. Significantly, the absence of husbands and their incomes in the case of unmarried women implies that such women face a relatively strong economic pressure to enter the labor market, hence, their greater participation rates in the child-rearing and post child-rearing stages. Whereas unmarried mothers are typically the sole earners in their households, they often qualify to receive other income, namely, welfare payments under the AFDC program. Our work shows that, except for the case of post-married women in period 3, the labor supply behavior of unmarried mothers is significantly affected by regional variations in the level of AFDC benefits. Finally, it is interesting to note that while being of Catholic religion and having had some schooling in a religious institution have a significant positive influence on the fertility of married women, the family size of unmarried mothers is insensitive to these variables.

The present analysis should be regarded as only a beginning. We have exploited the data contained in the 1973 National Survey of Family Growth in the best way possible; however, these data present two important problems. First, the sample of unmarried women is relatively small; thus, it has not been possible to study various subgroups of interest separately. Second, the labor supply histories available are not very detailed, so that we have not been able to match periods of female employment with corresponding periods in the marital-status histories. We hope that in the future it will be possible to overcome these difficulties, as richer and larger bodies of data become available.

FOOTNOTES

1 The figures reported in the first two paragraphs of the paper are based on the Current Population Report, Series P-20, No. 301-315, and Johnson (1978).

2 As indicated in Section C, the model we estimate for post-married women assumes that fertility depends, among other variables, on employment in the previous periods, and that the level of labor supply in stages 2 and 3 is a function of fertility, previous work experience and a number of exogenous variables. It should be recognized that our estimates may be subject to simultaneous-equations bias, since there is likely to be some simultaneity in the determination of fertility and labor supply for post-married women due to time-persistent, unmeasured differences among women. The potential bias is likely to be larger for women whose fertility has been completed prior to the dissolution of marriage than for those whose marriages may have been dissolved in the middle of what would otherwise have been a sequence of births.

3 Since women over 45 years of age were excluded from the survey, none of the respondents had completed the third period according to our definition. Thus, we consider the post child-rearing stage to date.

4 It would have been preferable to consider AFDC payments per recipient for each state or county. This was not possible, however, since the tape only documents residence at the regional level.

5 We estimate the L2 equation using only data from women in period 2 at the time of the survey, because OTHINC is included in this equation. The non-employment income sources that are available to a woman in the child-rearing period may be quite different from those that are available to her in the subsequent stage.

6 The difference in the magnitudes of the impact of years of schooling on fertility between married and unmarried women is probably larger than indicated by the regressions in Table 3, since they include L1A and L1B, while our previous fertility regressions for married women do not.

7 The large standard errors associated with the coefficients of WED1 in the L1A and L1B equations makes comparisons involving this variable difficult.

8 While the figures corresponding to married women in Tables 2 and 5 are all based on respondents who were in stage 3 at the time of the survey, the figures for single and post-married women are based on respondents at various life cycle stages. To ascertain whether cohort effects might influence our conclusions, we recomputed the entries on Table 2 and 5, using only data on unmarried women in the post child-rearing period. All the qualitative conclusions reported in the text remained unchanged.

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Table 1: Labor Supply Equations for Period before Marriage, and for Interval between Marriage and First Birth: Post Married Women.
(Standard error in parentheses, elasticities in brackets)

	L1A	L1B
WEDUC	.003162 (.003549) [.248]	.1268 (.03152) [2.44]
WED1	.03294 (.02200)	.2443 (.2044)
HEDUC	----	- .03047 (.03059)
SOUTHC	- .02382 (.01861)	- .07016 (.1752)
LIVPAR	.01276 (.01797)	.4327 (.1693)
SIBL 1	.001984 (.001336)	- .002364 (.01252)
RACE	-.01994 (.01868)	- .03478 (.1766)
AGE	.006501 (.001246)	.01692 (.01180)
CONSTANT	-.1646 (.06279)	- 2.198 (.6256)
Percentage of observations with dependent variable ≠ 0	68%	49%
N	979	979

Table 2: Percentage of Cases with a Positive Level of Labor Supply for Periods 1A and 1B, by Race and Marital Status

(Number of Cases in Parentheses)

	L1A	L1B
POST-MARRIED		
All	68% (979)	49% (979)
White	77% (405)	57% (405)
Black	62% (574)	44% (574)
MARRIED		
All	78% (1485)	58% (1485)
White	82% (1214)	62% (1214)
Black	64% (271)	41% (271)

Table 3: Fertility Equations
Dependent Variable = NUM

(Standard errors in parentheses, elasticities in brackets)

	POST-MARRIED	SINGLE
WEDUC	-.1812 (.02409) [-.684]	-.1517 (.02494) [-.831]
WED1	.008318 (.1328)	-.2961 (.1398)
HEDUC	-.04936 (.01931) [-.181]	---
L1A	-.8638 (.2716)	---
L1B	-.02393 (.03707)	---
CATH	-.1426 (.1479)	-.1049 (.1913)
RELED	.01777 (.1541)	.1345 (.1985)
SUBF	-.1562 (.1188)	.03622 (.1432)
WIDOWED	-.1835 (.1698)	---
DIVORCED	-.07050 (.1172)	---
SOUTHC	-.02580 (.1468)	.2656 (.1421)
LIVPAR	.2095 (.1066)	.09849 (.09623)
SIBL1	-.002754 (.008047)	.02010 (.01330)
SOUTH	-.1681 (.1460)	-.1055 (.1455)
SMSA	.3091 (.1453)	-.1944 (.1508)
DUR	.09415 (.01137)	---
AGE	.05648 (.01017)	.1076 (.007396)
RACE	.6717 (.1257)	---
CONSTANT	2.661 (.4153)	.6408 (.3716)
N	975	626
R^2	.3386	.3418

Table 4: Labor Supply Equations for Child-Rearing and Post Child-Rearing Periods

(Standard errors in parentheses, elasticities in brackets)

	POST-MARRIED WOMEN		SINGLE WOMEN	
	L2	L3	L2	L3
WEDUC	.03652 (.009729) [1.14]	.02920 (.008482) [.445]	.06696 (.01795) [2.20]	.04529 (.02318) [.710]
WED1	.1119 (.04654)	.09325 (.04852)	.1734 (.09097)	.2939 (.1423)
OTHINC	-.002131 (.01566)	-.02766 (.01256)	.03466 (.06020)	.05170 (.08812)
AFDC	-.002515 (.001137)	-.001304 (.001180)	-.004827 (.001864)	-.005364 (.003072)
HEDUC	-.02110 (.007295 [-.643]	-.0001120 (.007027) [-.00165]	---	---
L1A	.2535 (.08990)	-.06377 (.1145)	---	---
L1B	.004217 (.01304)	-.008256 (.01433)	---	---
NUM	-.03604 (.01232)	-.01325 (.01130)	.007021 (.02985)	-.05010 (.03355)
WIDOWED	-.03471 (.06630)	-.1310 (.05916)	---	---
DIVORCED	.1967 (.04199)	.04399 (.04451)	---	---
DUR2	.0005459 (.06226)	---	---	---
DUR3	---	-.05938 (.06004)	---	---
SMSA	-.07749 (.05063)	.04695 (.05434)	-.004847 (.09540)	.001846 (.1760)
AGE	.01044 (.003848)	-.004723 (.004257)	.01456 (.007368)	.001302 (.01114)
RACE	-.01421 (.04281)	.03990 (.04324)	---	---
CONSTANT	-.03617 (.1564)	.6741 (.1914)	-.6797 (.2595)	.4223 (.4814)
Percentage of observations with dependent variable ≠ 0	80%	88%	68%	75%
N	485	491	516	110

Table 5: Percentage of Cases with a Positive Level of Labor Supply for Periods 2 and 3, by Race and Marital Status

(Number of Cases in Parentheses)

	L2	L3
POST-MARRIED		
All	80% (485)	88% (491)
White	81% (192)	88% (212)
Black	79% (293)	88% (279)
SINGLE		
All	68% (516)	75% (110)
White	61% (31)	60% (10)
Black	68% (485)	76% (100)
MARRIED		
All	54% (1485)	74% (1485)
White	51% (1214)	71% (1214)
Black	71% (271)	86% (271)