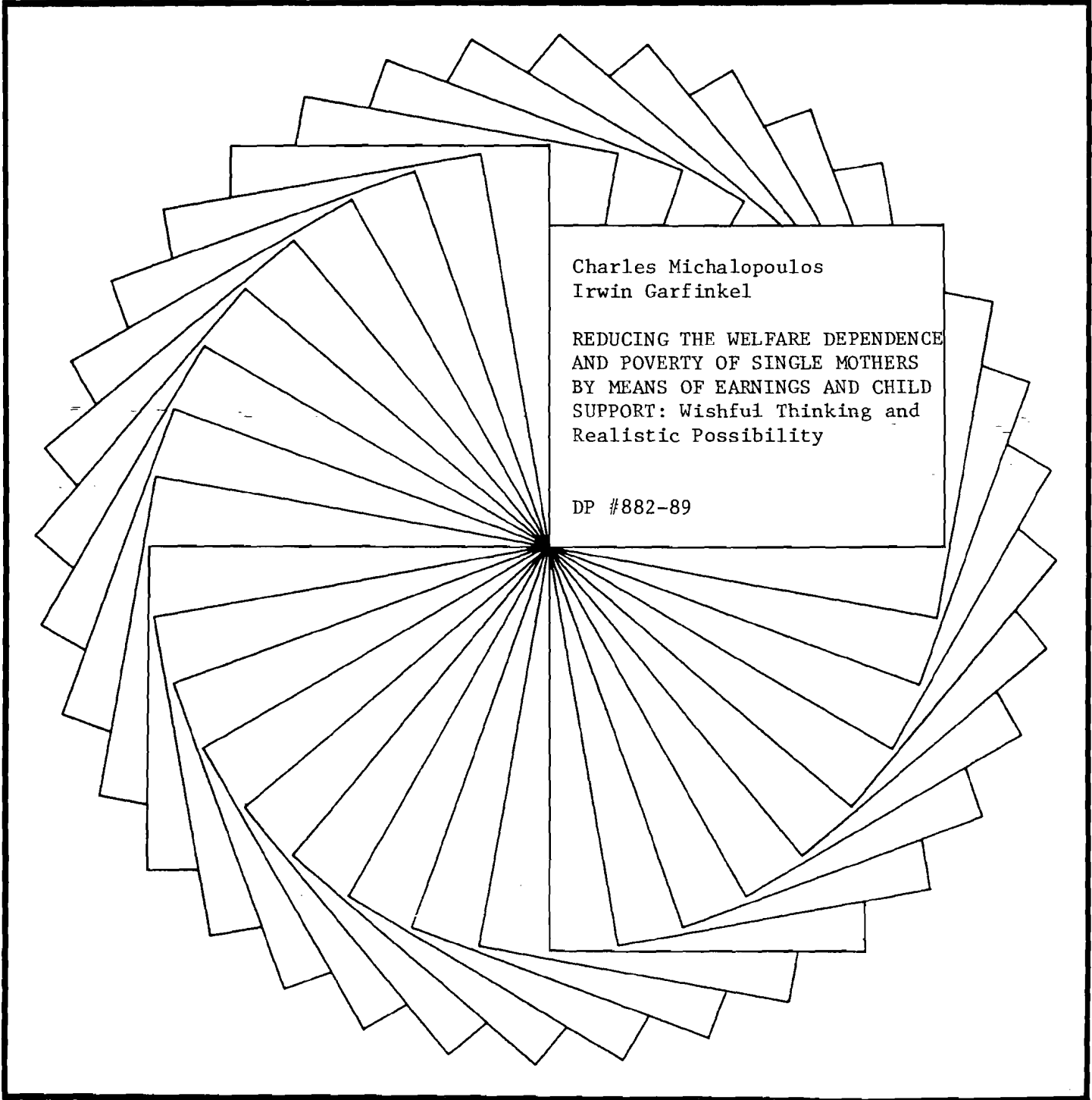

IRP Discussion Papers



Charles Michalopoulos
Irwin Garfinkel

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AND POVERTY OF SINGLE MOTHERS
BY MEANS OF EARNINGS AND CHILD
SUPPORT: Wishful Thinking and
Realistic Possibility

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**Reducing the Welfare Dependence and Poverty of Single Mothers
by Means of Earnings and Child Support:
Wishful Thinking and Realistic Possibility**

Charles Michalopoulos
Department of Economics and
Institute for Research on Poverty
University of Wisconsin-Madison

Irwin Garfinkel
School of Social Work and
Institute for Research on Poverty
University of Wisconsin-Madison

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Abstract

The goal of recent federal welfare legislation has been to reduce the poverty of welfare families by requiring the mothers of children dependent on public assistance to work and the fathers of these children to pay child support. We address the potential of such legislation by examining the earnings capacity of single AFDC mothers and the child-support-paying capacity of the fathers of their children. We find that under the optimistic assumptions of (1) full-time, full-year employment of the mother, (2) complete compliance with child support orders by the father, and (3) limited need to pay for child care, five-sixths of these mothers would have income in excess of their AFDC grants plus food stamps. When these assumptions are relaxed, however, we find that work and child support alone are insufficient to raise the incomes of nearly two in three families above the level of AFDC benefits plus food stamps.

I. INTRODUCTION

The thrust of recent federal welfare legislation is to require the mothers of children dependent on welfare to work and the fathers of these children to pay child support.¹ The hope is that through the enforcement of work and child support, both the poverty and the welfare dependence of these families can be eliminated or at least substantially reduced. This paper is designed to assess the extent to which that hope is based on wishful thinking or is grounded in reality.

Fifteen years ago, Isabel Sawhill (1974) addressed a closely related question. She found that about half of the mothers dependent on AFDC in 1972 could not earn any more than their AFDC grant provided them even if they worked full time throughout the year, and that another quarter of the caseload could earn only up to \$1000 more than their welfare grant. These findings suggest that most AFDC mothers cannot earn their way off welfare.

However, Sawhill failed to consider the combination of child support and earnings. One question we address in this paper, therefore, is whether consideration of child support appreciably improves the outlook. At the same time, Sawhill also ignored work-related expenses. We examine the extent to which taking account of child care costs and taxes worsens the outlook. Finally, when Sawhill did her research, methods for correcting for selectivity bias were not yet fully developed. This paper addresses the extent to which estimates of the

proportion of AFDC families that can escape poverty and welfare by means of earnings and child support are sensitive to corrections for selectivity bias.

Four sections of the paper follow. The first describes the methods and data used. The second presents intermediate estimating equations for the wage rates and child care costs of AFDC mothers and the incomes of noncustodial fathers. The third section presents the final estimates of the proportion of AFDC mothers that can be expected to escape welfare dependence and poverty via full-time work and maximum child support enforcement. The last section summarizes the findings and discusses both policy implications and future research needs.

II. OVERVIEW OF PROCEDURE

The central financial factor associated with employment is the wage to be garnered. However, other expenses and income sources might also have a large impact on the decision to work. For example, the unemployed head of a family that receives AFDC incurs no expenses for child care, work-related transportation, and health insurance. On the other hand, child support payments in excess of \$50 per month are withheld from the custodial parent when the family receives AFDC. Of the various costs and non-wage-income sources resulting from employment, we have chosen to focus our attention on child

care costs and child support income as the two factors with the greatest impact on the financial well-being of a family headed by a single mother.

Our analysis proceeds in two phases. In the first, we estimate linear equations for the expected wage, child support payments, and child care costs conditional on the traits of the family, the custodial mother, and the noncustodial father. In the second phase, we impute expected values for these quantities for a sample of AFDC families headed by single women. We then compare the imputed net income to maximum AFDC plus food stamp benefits and to the poverty threshold to estimate the proportion of these families whose net incomes would exceed these two levels.

For each of the quantities to be estimated, we are primarily interested in the statistical expectation and only secondarily interested in the implications of particular parameters. For computational simplicity, we limit the estimations to the class of linear expectation functions. Ordinary least squares (OLS) was the primary tool used. Nevertheless, our method of estimation varied slightly depending upon the quantity being estimated.

To estimate wage income, we first estimated an expected wage for each AFDC mother, conditional on her characteristics and those of her family. As is usual, our data on wages consist only of accepted wage offers. We therefore correct

for potential sample selection bias using the method of Heckman (1979).

We were uncertain how best to apply the correction term to obtain an expected wage for the AFDC mothers. Suppose that wages can be expressed as

$$(1) \quad w = X\beta + \varepsilon ,$$

where w is the natural logarithm of hourly wage,

X is a vector of characteristics,

β is a vector of parameters, and

ε is a random variable.

Let r represent the reservation wage of a woman and suppose that a wage offer is accepted if it exceeds the reservation wage. Then the expected wage offer for a working woman with characteristics X is

$$(2) \quad E(w|X, w>r) = X\beta + E(\varepsilon|X, w>r).$$

The Heckman method provides a means of estimating the last term. On the other hand, the average rejected wage is

$$(3) \quad E(w|X, w<r) = X\beta + E(\varepsilon|X, w<r)$$

$$= X\beta - \frac{\Pr(w>r|X)}{\Pr(w<r|X)} E(\varepsilon|X, w>r),$$

using the standard assumption $E(\varepsilon|X)=0$.

The appropriate use of the estimated correction term depends on the properties of ε accepted by the analyst and the means by which AFDC women are assumed to find employment. According to one view, different wage offers for the same individual have random components which are independent of one another. The next offer received comes from the complete wage distribution, which has a mean zero disturbance. Therefore, if we envision that AFDC mothers are forced to accept the next offer received, we would ignore the correction term in imputing an expected wage. On the other hand, if the woman were forced to accept her last previous offer, we should use equation (3) to calculate imputed wages. The previous offers include random components from the population of rejected wage offers. The expected disturbance in this subpopulation is included in equation (3). Finally, if we assume that AFDC mothers will be given assistance and time to find employment, equation (1) would be appropriate if accepted offers are higher on average than rejected offers.

In a scenario consisting of the opposite extreme, the unobserved component is constant over various wage offers received by the same individual but differs across individuals, as if each had been endowed with an ε randomly assigned at conception, to suffer under its burden or benefit from its generosity for an entire lifetime. This view is consistent with the notion that wage offers for some women are systematically lowered (or raised) by traits which are

observed by employers but remain invisible to the analyst. Under this assumption, equation (3) would be appropriate for calculating the expected wage for unemployed AFDC mothers. To examine the sensitivity of our results to the assumptions maintained, we carry out our comparisons with each of the three equations above.

The second component of our analysis is potential child support payments by noncustodial fathers. We employ a two-step approach in which we first estimate the expected income of the noncustodial father and then apply state standards to determine the child support obligation. For this purpose, AFDC mothers are divided into two groups, separated women and never-married women. The distinction between the two groups is that our data allow us to estimate directly the income of former husbands as a function of the women's characteristics. In contrast, we could make no connection between never-married women and the fathers of their children. To circumvent this difficulty, we assume that all such fathers had also never been married and estimate an equation for the income of never-married men as a function of their own characteristics. In order to impute an income to the noncustodial father of the children of a never-married woman, we assume that the man and woman have nearly the same traits.

This procedure provides an estimate of the income of the father given that he works (or has positive income). However, not all men in our sample were employed. To determine the

likelihood that the father is employed, we estimate a probit function. In practice, some women will also not receive child support because of nonpayment by fathers. We ignore this factor because we are interested in the potential welfare of the family under legislation designed to enforce child support orders.

To estimate an equation for child care expenditures, we use a more direct two-step approach. In the first step, we use expenditures reported by families using paid care to estimate costs, given that paid child care is used. In the second step, a probit function is used to estimate the likelihood that a family would use paid child care.

Our analysis results in four possible scenarios: (1) the working mother receives child support payments² and must pay for child care; (2) she receives no payments but still must pay for child care; (3) she receives child support but child care is free; or (4) she receives no support and child care is free. The two probit functions provide a means of estimating the probability that the noncustodial father would work and that paid child care would be needed. We can use these probabilities to calculate the mother's expected net income over the four scenarios and obtain an average difference between net income and the poverty line. We believe, however, that expected net income can obscure the variance in potential income represented by the various scenarios of child care use and child support receipt. For example, suppose we found that

the weighted average of one mother's net income, weighted by the estimated probability of the four scenarios, would be just sufficient to exceed the poverty line. The same family might be very well off when receiving free child care, but well below the poverty line when paying for child care. We believe that by examining the four scenarios separately, we obtain a more accurate notion of the distribution of the potential welfare of families. Therefore, we compare net income to maximum AFDC benefits and to the poverty line under each scenario and obtain a distribution for each family. A probability distribution for the sample is then calculated as a normalized sum of the distributions of individual families.

The next section provides results of the various estimations. Section IV compares imputed income with two measures of poverty: the official poverty threshold, and the maximum AFDC and food stamp benefits available.

III. ESTIMATION RESULTS

All data for our estimations and imputations were extracted from the Survey of Income and Program Participation (SIPP). SIPP is divided into nine data-collection periods, called waves, each containing four months of data for each individual, family, and household in the sample. Each wave contains a core set of data on income sources and participation in government programs. In addition, several

waves contain modules with information on such specific topics as training and employment history, fertility history, and child care usage.

To estimate a wage equation for single mothers, we extracted data for 812 families from SIPP's Wave 3, which contains information concerning work history. Families were included in our sample if they were headed by single women, included at least one child under the age of 18, and included no adults other than the single mother.³ Within this sample, wage information was available for 505 of the mothers.

Table 1 reports results of estimating three different specifications of the wage equation. The first two specifications employ the Heckman correction for sample selection bias. Both specifications therefore include two estimations, one for the probability of a woman working and a second for the linear wage equation which includes a term for correction of sample selection bias. The third specification is an OLS estimation with no bias correction. The dependent variable in the wage equation is log of hourly wage.

The first specification includes a reasonably complete list of variables normally included in such estimations. All of the estimated coefficients are of the expected sign or statistically indistinguishable from zero. Although the coefficient on the correction term is insignificantly different from zero, it is negative. Our prior expectation was that the correction coefficient would be positive. This

Table 1

Estimations of the Probability that a Single Mother Will Work and
of the Wage She Will Receive, under Three Specifications

Variable	Probit Result		Wage Equation Results		
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	OLS
Constant	-0.9611 (1.096)	-2.1379 (0.9801)	0.8151 (0.4606)	0.1580 (0.4336)	0.4843 (0.4433)
Age	0.0803 (0.0549)	0.1509 (0.0494)	0.00500 (0.0209)	0.0246 (0.0205)	0.00996 (0.0228)
Age squared	-0.00125 (0.00071)	-0.00203 (0.00066)	-0.00012 (0.00028)	-0.00038 (0.00028)	-0.00017 (0.0003)
Education	0.0369 (0.0475)	0.00266 (0.0459)	0.0481 (0.0173)	0.0532 (0.0172)	0.0528 (0.0177)
Completed high school ^a	0.2727 (0.1872)	0.2819 (0.1837)	0.0427 (0.0723)	0.0721 (0.0721)	0.0533 (0.0728)
Completed college	0.7977 (0.3283)	0.7859 (0.3159)	0.1880 (0.0936)	0.2341 (0.0944)	0.2072 (0.0933)
Work exper.	0.1922 (0.0223)	0.1932 (0.0221)	0.0300 (0.0136)	0.0558 (0.0146)	0.0411 (0.0094)
Exp. squared	-0.00482 (0.00073)	-0.00483 (0.00073)	-0.00070 (0.00038)	-0.00014 (0.00041)	-0.00099 (0.00030)
Black	-0.3760 (0.1247)	-0.2346 (0.1195)	-0.0114 (0.0446)	-0.0645 (0.0428)	-0.0399 (0.0443)
State unempl. rate	-0.0524 (0.0303)	-0.0493 (0.0297)	0.00759 (0.01046)	0.00623 (0.01022)	0.00697 (0.0105)
Regional Dummies					
Northeast	-0.1909 (0.1808)	-0.1463 (0.1757)	-0.0546 (0.0576)		-0.0451 (0.0601)
South	-0.0696 (0.2082)	-0.1096 (0.1937)	-0.1552 (0.0557)		-0.1053 (0.0671)
Midwest	-0.3952 (0.1819)	-0.3845 (0.1751)	-0.0260 (0.0584)		-0.0243 (0.0610)
Metrop. area	0.0068 (0.1332)	-0.00281 (0.1299)	0.1407 (0.0431)	0.1474 (0.0431)	0.1444 (0.0441)
Disabled	-1.3787 (0.1953)	-1.3847 (0.1920)	-0.0400 (0.1257)	-0.2243 (0.1348)	-0.1295 (0.1025)
AFDC grant (\$ 1000)	-0.00161 (0.00045)	-0.00156 (0.00037)			0.1003 (0.1459)
Asset income (\$ 1000)	-0.3577 (0.1598)				-0.1004 (0.0704)

Table 1, continued

Variable	Probit Result		Wage Equation Results		
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	OLS
Other income (\$ 1000)	-0.0658 (0.0259)				-0.0148 (0.0108)
Number of children:					
Under 6 yrs.	-0.1871 (0.0932)				-0.0098 (0.0455)
12-18 yrs.	0.2116 (0.0860)				-0.0127 (0.0343)
Correction coefficient			-0.1258 (0.1104)	0.1432 (0.1186)	
Observations	812	812	505	505	505
R-Squared					0.2870

Note: Specifications 1 and 2 include a correction for selection bias; see text for explanation. The third specification is an uncorrected ordinary least squares estimation.

^aIn this and subsequent estimations, the variable "Completed high school" equals one if the individual completed high school but did not complete college.

expectation is in accordance with the notion that the average accepted wage offer is higher than the average rejected wage offer. In more precise terms, rejected wage offers are more likely to correspond to negative random disturbances. At the same time, accepted wage offers are more likely to correspond to high offers caused in part by positive realizations of the disturbance.

To understand our expectation, consider the following version of the standard static labor supply model. Suppose, as in equations (1) through (3), that a wage is accepted if the wage offer, w , is higher than the reservation wage, r . Let $w = X\beta + \varepsilon$ and $r = W\delta + u$, where $(u, \varepsilon) \sim N(0, \Sigma)$ and $\Sigma = \begin{pmatrix} \sigma_{11} & \sigma_{12} \\ \sigma_{12} & \sigma_{22} \end{pmatrix}$. Then employment is accepted if $w-r > 0$. Substituting for w and r yields the condition

$$(4) \quad (X\beta + \varepsilon) - (W\delta + u) > 0 \quad \text{or}$$

$$(X\beta - W\delta) > u - \varepsilon.$$

Under these assumptions, the coefficient on the correction term is an estimate of $\frac{\text{Cov}(\varepsilon, \varepsilon - u)}{\sigma_{22}} = \frac{\sigma_{22} - \sigma_{12}}{\sigma_{22}}$. The sign of the parameter is the sign of the numerator. Since σ_{22} is positive, the numerator will be negative only if the covariance between ε and u is positive and exceeds the variance of ε .

A story can be told to justify the negative correction term. Suppose that women who can expect higher than average

offers are also more selective in accepting offers. For example, these women might also have higher than average expectations about the value of their skills. In this case, unemployment would often result from high reservation wages rather than low wage offers. Women not working would demand higher wages and therefore estimates of wages using working women would contain a downward bias.

Although this explanation is possible, it seems implausible to us. Unobserved factors affecting reservation wages may be positively or negatively correlated with unobserved factors affecting wage offers. For example, a devoted mother, with a higher than average reservation wage, might also be an industrious worker, with a work record that commands higher than average compensation. On the other hand, laziness would also increase the reservation wage while decreasing attractiveness as a worker. Because it is likely that unobserved influences on reservation wages are relatively uncorrelated with unobserved influences on wage offers, we believe sample selection will bias expected wages upward. The second specification of the wage equation was designed to reflect this belief.

The sign of the coefficient on the correction term might also be explained by the presence of several endogenous variables on the right-hand side of the probit equation. Consider the number of preschool children. To the extent that childbearing is a voluntary act, the decision to have a child

is made jointly with the labor force decision. A single variable would capture only the average difference between women with young children and other women. In particular, if women who have recently chosen to have children have also decided to leave the labor force for some period of time, then the effect of human capital variables on labor supply would be lower than the effects implied by Table 1. As a result, we would overestimate the probability of working in the case of a high-potential earner with a young child. The negative correction coefficient may be a possible consequence of this endogeneity.

Asset income is also endogenous to the labor-supply decision. All other things equal, economic theory suggests that an increase in asset income will decrease the probability of working. However, a woman with high asset income may also be one who has chosen to work in the past and is therefore more likely to choose to work in the present. To avoid problems stemming from endogeneity, we eliminated variables relating to children and non-means-tested income in our second probit specification. At the same time, we eliminated regional dummy variables from the wage equation.

The removal of these variables did not substantially change the parameter estimation of the remaining variables. As in the first specification, all estimated coefficients are of the expected sign or are indistinguishable from zero. Most coefficients in the probit equation changed only slightly.

The age and education variables were exceptions. However, many of the coefficients in the wage equation did change.

Neither of the two bias-corrected specifications provides strong evidence for the existence or the direction of the sample selection bias. If there is no bias, then OLS provides an appropriate method for determining the best linear predictor of income. The final column in Table 1 includes parameter estimates from an uncorrected OLS estimation. The coefficients are not very different from those estimated using the Heckman technique. For almost every variable included in each income equation, the estimated parameter using OLS falls nearly halfway between the estimates from the other two equations. In addition, none of the variables excluded from the Heckman-corrected equations has an estimated coefficient which is significantly different from zero.

Estimation of expected child support payments proceeded in two steps. First, two income equations were estimated, one for divorced and separated men and the second for never-married men. Second, the Wisconsin percentage-of-income standard for child support awards was applied to estimated income to calculate an estimated obligation.

To estimate income of divorced and separated men, we used 36 months of data, covering nine SIPP waves. The purpose of the estimation is to predict the income of the noncustodial father solely from the characteristics of the divorced custodial mother. All couples who became divorced during the

sampling period were included in the estimations. Using this criterion, data for 532 couples were collected.

A commonly cited problem in the estimation of relationships over time is correlation between observed traits and unobserved traits, such as ability. A regression which does not explicitly account for the unobserved characteristics will produce inconsistent estimates of the effects of the observed characteristics. However, we are interested in determining the best linear projection of income given the factors we observe. Therefore, we do not explicitly account for correlations among observed and unobserved traits.

Table 2 presents results of the estimation of income of divorced men.⁴ Because data from nine waves were used, a binary variable was included for each wave to capture the effects of inflation and average productivity increases over time. Most of the trait variables have parameter estimates that are significantly different from zero at a 5 percent significance level. For both specifications, ex-husbands of older, better-educated, city-dwelling women earn more, while ex-husbands of black women, Midwestern women, and women who received AFDC earn less, on average.

In addition, coefficients on two binary variables indicate that there is no significant change in income subsequent to divorce and that the ex-husbands of women who receive AFDC subsequent to divorce have lower incomes than other men. In order to test the hypothesis that income changes after

Table 2

Regression of Income of Divorced Men on Characteristics of Ex-Wives

Dependent Variable: Natural Log of Income

Intercept	6.8559 (0.1970)
Age	0.006536 (0.00036)
Age squared	-6.365×10^{-6} (7.393×10^{-7})
Education	0.00307 (0.01295)
Grade school	-0.2508 (0.1105)
Completed high school	0.2546 (0.0486)
Completed college	0.5309 (0.1017)
Black	-0.2958 (0.0525)
Divorced prior to wave	-0.0270 (0.0334)
Received AFDC during wave	-0.5545 (0.0727)
Metropolitan area	0.1960 (0.0277)
<u>Regional Dummies</u>	
Northeast	-0.0248 (0.0395)
Midwest	-0.1484 (0.0364)
South	-0.1084 (0.0328)
<u>Wave Income Received</u>	
Wave 2	0.0604 (0.0502)
Wave 3	0.0484 (0.0468)
Wave 4	0.0844 (0.0481)
Wave 5	0.0991 (0.0502)
Wave 6	0.0911 (0.0527)
Wave 7	0.1595 (0.0553)

Table 2, continued

Dependent Variable: Natural Log of Income	
Wave 8	0.1256 (0.0632)
Wave 9	0.1390 (0.0612)
R ²	0.1921
Observations	2,819

divorce--either because of a change in the man after divorce or as a reflection of factors that caused the dissolution of the marriage--a fixed-effects model was estimated. The fixed-effects estimation, which is not presented, indicated no significant change in income after divorce.

The results presented in Table 2 apply only to divorced and separated men. A separate wage equation was estimated for never-married men. SIPP includes 4,997 men who indicated that they had never been married. Of these men, 3,615 were in the SIPP sample during the first SIPP wave. We used data from only the first wave to estimate the parameters of an income equation.⁵ Of the never-married men in the first SIPP wave, 3,200--about 89 percent--reported positive income. Since the log of income was used as the dependent variable in the regression, the men reporting zero or negative income could not be used. In order to incorporate the fact that some men did not work, a separate probit estimation was performed to determine the likelihood that a man with a given set of characteristics would not work.⁶

Table 3 presents the estimated parameters of the income equation. As expected, age and education are positively correlated with income. Unlike other estimations, however, never-married men in metropolitan areas seem to have the same earnings as similar men in nonmetropolitan areas. There appear to be no regional differences in income. Finally, the

Table 3

Estimation of Income Equation and Probabilities of Working
among Never-Married Men

Variable	Income Equation (Dependent variable is log of income)		Probit Equation	
	Nonblack Men	Black Men	Nonblack Men	Black Men
	Intercept	-2.6579 (0.2548)	-2.1576 (0.6253)	-0.2964 (0.2838)
Age	0.01283 (0.00129)	0.01114 (0.00293)	0.00458 (0.00143)	0.01179 (0.00406)
Age squared	-1.110E-5 (1.026E-6)	-9.437E-6 (2.464E-6)	-0.2871E-5 (0.1284E-5)	-0.7241E-5 (0.3813E-5)
Age*education	7.234E-5 (4.432E-5)	2.803E-5 (1.097E-4)	-0.0939E-4 (0.4465E-4)	-1.0207E-4 (1.1400E-4)
Completed high school	0.1985 (0.1151)	0.3479 (0.2081)	0.4398 (0.1103)	0.5734 (0.1992)
Completed college	0.0573 (0.1565)	0.3525 (0.3367)	0.6123 (0.1620)	0.7905 (0.3738)
Metrop. area	0.0542 (0.0684)	0.2228 (0.1717)	0.2294 (0.0711)	0.2307 (0.1585)
Northeast	8.122E-3 (0.0854)	-0.3645 (0.2623)	-0.1789 (0.0960)	-0.0048 (0.2758)
Midwest	-5.476E-2 (0.0859)	-0.8154 (0.2660)	-0.0044 (0.0984)	-0.1190 (0.2687)
South	5.773E-2 (0.0853)	-0.7436 (0.2421)	-0.0502 (0.0970)	0.2055 (0.2577)
Retained ^a	-0.0675 (0.0632)	0.1594 (0.1322)		

Table 3, continued

Variable	Income Equation (Dependent variable is log of income)		Probit Equation	
	Nonblack Men	Black Men	Nonblack Men	Black Men
Observations	2,781	418	3,067	545
R-squared	0.1010	0.1557		
Log-likelihood			- 898.4	-261.85

^aRetained equals one if the man responded in each SIPP wave.

fact that a man was included in each wave of the SIPP survey seems to indicate nothing about his earnings.

Table 3 also presents the estimated parameters of the likelihood that a never-married man worked. As expected, older and better-educated men are more likely to be employed, as are men who live in metropolitan areas. The regional differences are less consistent: white (nonblack) men in the Northeast are less likely to work than are those in the West; black men in the South are more likely to work than those in the West.

The steps in the analysis of child care costs are the same as those in the analysis of the income of never-married men. In one stage, a probit estimation is performed to determine the likelihood that a family with given characteristics would pay for child care. In the second stage, the information provided by families that paid for child care is used to estimate an equation of child care costs as a function of family characteristics. It is likely that this technique is subject to sample selection bias. Our estimation yields expected child care costs for families in which the parents voluntarily chose to work and paid for child care. If mothers choose to receive AFDC because available child care is expensive, then we will underestimate the expected costs. In a similar way, if these mothers are less likely to have access to free child care, we will underestimate the probability that they would purchase child care if they were to work.

The SIPP survey contains one wave (four months) of information about child care use and expenditures for 3,615 families with children. We used a family's response only if all parents worked during the wave. In addition, we eliminated households which included adult members other than the parents. The last restriction was made so that the sample would be consistent with our sample of single mothers. Approximately half of the original sample--1,774 families--met these criteria. Several questions were asked in order to ascertain the manner in which children were cared for. Among these were questions regarding the type of care, the location of care, and expenditures on child care. Information was obtained for the three youngest children in each family.

Table 4 presents results of a probit estimation to determine the likelihood that child care was purchased. Separate estimations were performed for families with and without preschool children. The results indicate that wealthier parents are more likely to pay for child care. The presence of a spouse decreases the probability of paid child care, despite the exclusion from our sample of families with unemployed parents. In addition, families with preschool children are less likely to purchase care if older children are present. These effects may reflect the ability of two-parent families and families with older children to arrange work time so that paid care is unnecessary.

Table 4

Probit Estimation: Probability that Child Care Was Purchased

Variable	Families with Preschool Children	Families with No Preschool Children
Intercept	-0.2018 (0.3814)	-0.5542 (0.5027)
Age ^a	-0.0268 (0.0165)	-0.0466 (0.0231)
Completed high school ^a	-0.0306 (0.2096)	-0.1632 (0.3046)
Completed college ^a	-0.1123 (0.3153)	-0.2597 (0.4696)
Age x education	0.00134 (0.00104)	0.1145 (0.0410)
Weekly hours worked	0.0199 (0.0034)	0.0221 (0.0058)
Income (\$1000/month)	0.1257 (0.0313)	-0.4928 (0.1481)
Black	0.0418 (0.1312)	-0.1195 (0.1973)
Spouse present	-0.3999 (0.1374)	-0.4928 (0.1481)
No. of children		
Under 6 years	0.0513 (0.0834)	
6 to 13 years	-0.1657 (0.0675)	
Northeast	0.0034 (0.1334)	0.2794 (0.1878)
Midwest	0.2267 (0.1202)	0.1754 (0.1861)
South	0.2995 (0.1155)	-0.0588 (0.1790)
Metropolitan area	-0.1250 (0.0918)	-0.00750 (0.1232)
Observations	1,046	728
Log-likelihood	-654.88	-296.98

^aFor families in which both parents were present, the age of the older parent and the education level of the better-educated parent were used.

Table 5 presents estimations of equations of hourly child care expenditures for families which purchased child care. The dependent variable is the natural logarithm of average hourly cost. The results are as expected. Wealthier families spend more on child care. In addition, expenditures appear to differ by race.⁷ Finally, average expenditures decrease when the number of children or the number of hours worked by the survey respondent increases.

IV. IMPUTATIONS AND COMPARISONS

In this section, we use the estimates presented in Section III to compare expected income with income that could be received from AFDC and food stamps and with the official poverty threshold. To perform this comparison, we extracted data from each of the nine SIPP waves for all families headed by nonmarried mothers who received AFDC. For each mother in each wave we imputed an hourly wage, the probability that paid child care would be used, the amount of child care costs if used, the probability that the noncustodial father would work, and the amount of child support if the noncustodial father were to work. In addition, we deducted federal income taxes and social security taxes from earned income. The 1987 tax schedule was used to determine federal income tax and standard deductions were assumed. To project child support payments, we applied the Wisconsin standard to projected noncustodial

Table 5

Estimation of Child Care Expenditures

Dependent Variable: Log of Hourly Cost

Intercept	0.3980 (0.2116)
Age ^a	-0.00470 (0.00940)
Completed high school ^a	-0.0816 (0.1108)
Completed college ^a	-0.1721 (0.1681)
Age x education	0.00130 (0.00058)
Income (\$1000/month)	0.0439 (0.0153)
Hours worked per week ^a	-0.0157 (0.0022)
Spouse present	-0.0207 (0.0644)
Number of children	
Under 6 years	-0.2748 (0.0391)
Older than 5 years	-0.1760 (0.0365)
Northeast	-0.0144 (0.0771)
Midwest	0.03711 (0.0683)
South	0.0507 (0.0648)
Metropolitan area	0.1623 (0.0502)
Black	-0.2840 (0.0687)
Observations	810
R-squared	0.1933
Sum squared residuals	132.19

^aFor families in which both parents were present, the age of the older parent and the education level of the better-educated parent were used. However, weekly work time is that of the responding parent.

fathers' incomes. Under the Wisconsin standard, a noncustodial father contributes 17 percent of his gross income for the support of one child, 25 percent for two children, 29 percent for three, 31 percent for four, and 34 percent for five or more.⁸ Maximum AFDC and food stamp receipts were taken from Committee on Ways and Means (1986, 1988), while poverty thresholds are weighted average poverty thresholds reported in the Statistical Abstract of the U.S., 1988.

In projecting noncustodial fathers' incomes, we implicitly make several assumptions. First, we assume that the marital status of the custodial mother is the same as that of the noncustodial father. That is, we assume that never-married women are associated with never-married men and that divorced or separated mothers are associated with divorced or separated men. Our income equation for divorced and separated men uses the characteristics of the divorced and separated women. Projecting the income of the man associated with a divorced woman is a straightforward task when we assume that the noncustodial father is the woman's ex-husband. In contrast, our income equation for never-married men includes the men's characteristics as explanatory variables. Therefore, in addition to assuming identical marital statuses of the mother and father, we assume identical characteristics, except for age. We add two years to the mother's age to adjust for an expected difference in age.

The set of explanatory variables in our estimation of the probability of paying for child care includes mother's income and the number of hours of paid child care. We estimate the mother's income as the sum of imputed wage income and imputed child support income. To determine the number of hours of child care needed, we group children by age. First, we assume that children older than twelve need no child care while children less than six require paid care for each hour worked by the mother. Children in the middle group--those between six and twelve years old--presumably attend school during the year but might require care after school and during summers. Therefore, we assume that during the school year--nine months of the year--paid care is unnecessary if the mother works fewer than 40 hours per week. If the mother works 40 hours, we assume that 10 hours of care will be needed for each child. In addition, we assume that during the summer--three months of the year--these children would require as much paid care as preschool children.

There are four possible combinations of receipt of child support and payment for child care: the mother might receive child support and use paid child care, she might receive child support but not use paid child care, she might use paid child support but not receive child support, or she may do neither. For each mother, separate probabilities were estimated for the two events. By using the relationship between joint probabilities and conditional probabilities-- $\text{Prob}(A \text{ and } B) = \text{Prob}(A) \times \text{Prob}(B|A)$

$B) = \text{Prob}(A)\text{Prob}(B|A)$ --we calculate probabilities for the four scenarios. For example, the estimated probability that child care is purchased and child support is received is the product of the probability that child support is received and the probability that child care is purchased, given that the mother's income includes child support. For each scenario, imputed income is compared to AFDC standards. We calculate a distribution of the difference between income and maximum AFDC benefits (or the poverty level) by assigning the difference under each scenario to its proper location in the distribution, but we also attach a weight equal to its projected probability of occurrence.

The estimates of wages, child care costs, and child support payments used data from 1984 and 1985. However, the 1987 income tax schedule was used and maximum 1987 AFDC benefit levels were used. To make the comparisons, all imputed numbers were converted to 1987 dollars. The comparison between income and maximum AFDC benefits was made for three levels of work: full time (40 hours per week), three-quarters time (30 hours per week), and half time (20 hours per week).

Before presenting the main results of the paper, we present a preview of the outcome in Table 6, which contains several descriptive statistics of the primary imputed quantities. A few comments are worth noting. First, wages vary considerably across the three specifications and the assumptions about disturbances. If we ignore the bias correction when imputing

Table 6

Descriptive Statistics of Imputed Quantities

Variable	Average	Minimum	Maximum
<u>Imputed Hourly Wage^a</u>			
<u>Positive bias specification</u>			
Bias ignored	\$3.98	\$1.25	\$9.80
Bias added	5.16	1.64	10.50
Bias subtracted	3.81	1.22	8.30
<u>Negative bias specification</u>			
Bias ignored	\$5.18	\$2.54	\$10.50
Bias subtracted	5.40	2.56	12.70
<u>Uncorrected OLS</u>	\$4.71	\$1.90	\$10.70
<u>Probability father employed</u>	.941	.504	1.00
<u>Annual child support payment^a</u>	\$1989	\$374	\$6576
<u>Probability Child Care Purchased^b</u>			
By full-time worker	.483	.020	.800
With preschool children	.651	.212	.800
With no preschool children	.214	.019	.500
By half-time worker	.335	.006	.700
With preschool children	.481	.110	.700
With no preschool children	.104	.006	.300
<u>Expenditures on Child Care^{a,b}</u>			
By full-time worker	\$1914	\$535	\$3546
With preschool children	2315	1375	3546
With no preschool children	1276	535	2309
By half-time worker	982	208	2028
With preschool children	1292	673	2028
With no preschool children	490	208	900

^a1987 dollars.

^bExcluding women with no children younger than 13.

wages, the two specifications produce estimated wages which are more than a dollar different, on average. The uncorrected OLS estimation yields imputations that lie between the two bias-corrected estimates, but are closer to the specification with a correction for negative bias. When the bias correction is added and is positive, the average wage is increased by more than one dollar. This result suggests that the women in our sample command such low compensation that a wage offer must be considerably above average to be acceptable. The wide range of imputed wages suggests that conclusions concerning the ability of AFDC mothers to support themselves will depend critically on the wage equation used.

The statistics in Table 6 also indicate the importance of child support payments. The average annual obligation is nearly \$2000. Although the median obligation is probably lower, an addition to income of this amount will lift many families over the poverty line.

The remainder of this section contains the main results of our analysis. Table 7 presents the comparison of full utilization of the mother's earnings capacity and the father's child support capacities as compared to both maximum AFDC benefits and the poverty line. Wage income was imputed using the six different specifications discussed in Section II. Comparisons are presented for each imputed wage, and an arithmetic average is reported in the last column. In the discussion that follows, we focus on the first and sixth

Table 7

Imputed Income of Single Mothers, Compared with AFDC Benefits
plus Food Stamps and Compared with the Poverty Threshold:
Percentage Distribution within Each Category

(Assuming full utilization of earnings capacity
and imputed payment for child care)

	(1)	(2)	(3)	(4)	(5)	(6)	Avg.
1. <u>Full Child Support Payment Received, Compared to Welfare Income</u>							
Income Less than AFDC plus FS							
Difference > \$1000	23.7	22.9	6.1	5.4	5.9	9.8	12.3
Difference < \$1000	10.1	8.5	6.7	4.8	4.8	8.6	7.3
Income More than AFDC plus FS							
Difference < \$1000	11.4	11.1	7.4	6.5	6.8	8.5	8.6
Difference > \$1000	54.8	57.5	79.8	83.2	82.5	73.0	71.8
2. <u>No Child Support Received or Child Care Purchased, Compared to Welfare Income</u>							
Income Less than AFDC plus FS							
Difference > \$1000	30.6	29.1	12.9	10.2	10.4	18.1	18.6
Difference < \$1000	10.3	8.4	5.2	5.9	6.8	5.4	7.0
Income More than AFDC plus FS							
Difference < \$1000	13.2	13.5	9.3	5.4	7.2	10.1	9.8
Difference > \$1000	45.9	49.1	72.7	78.5	75.6	66.4	64.7
3. <u>Full Child Support Payment Received, Compared to Poverty Level</u>							
Income Less than Poverty Level							
Difference > \$1000	35.8	32.8	13.9	12.8	13.3	18.6	21.2
Difference < \$1000	14.3	13.3	6.1	5.6	6.4	9.7	9.2
Income More than Poverty Level							
Difference < 1000	13.2	13.6	12.6	9.6	10.6	12.9	12.1
Difference > 1000	36.7	40.3	67.3	71.9	69.6	58.8	57.5

Column Key:

- (1) Expected wage conditional on not working, positive bias specification.
- (2) Expected wage unconditioned, positive bias specification.
- (3) Expected wage conditional on working, positive bias specification.
- (4) Expected wage conditional on not working, negative bias specification.
- (5) Expected wage unconditioned, negative bias specification.

columns. If we believe that women receiving AFDC are less employable than other women, then column 1 contains the appropriate results. On the other hand, if we accept the lack of evidence for selection bias, then the uncorrected OLS estimate, presented in column 6, is appropriate.

The top panel of Table 7 compares income from fully utilized earnings and child support capacities to AFDC and food stamp income. Two points stand out. First, there is substantial variation in the estimated proportion of the caseload that cannot exceed their AFDC grants under these conditions. The first column suggests that more than one-third cannot exceed their welfare grants, whereas the fourth suggests that only 10 percent cannot do so.

Second, no matter which specification is used to impute the mother's wage rate, the proportion of the caseload that cannot surpass AFDC income is substantially lower than Sawhill's estimate of 50 percent. The most comparable estimate to hers, the one derived from OLS and given in column 6, is equal to about 18 percent, slightly more than one-third that of Sawhill.

The results in the second panel, in which neither child support income nor child care expenses are considered, suggest that, on average, child support income exceeds expected child care costs by only a small amount. Note that the estimated proportion of those who exceed welfare income in column 6

increases from 18 percent in the first panel to 24 percent in the second.

The results in the third panel, which compares fully utilized earnings and child support capacities to the poverty level, in conjunction with those in the first suggest that a substantial proportion of AFDC mothers who can surpass welfare income under those conditions cannot manage to escape poverty. For example, in the first column of the third panel, more than one in four who can better their AFDC benefit cannot escape poverty. As a consequence the proportion who cannot escape poverty is 50 percent. This is 50 percent higher than the estimate of the proportion who cannot better their AFDC grant. Indeed, 50 percent is as big as the Sawhill estimate! The contrast between the first and third panels suggests the importance of distinguishing between the objectives of eliminating welfare dependency and escaping poverty. This distinction also helps account for the difference between Sawhill's findings and the results in the first panel. Because the real value of AFDC benefits declined by 27 percent between 1975 and 1985, it has become easier to exceed welfare levels, whereas the poverty level has remained constant in real terms.⁹

Finally, note that regardless of which wage estimation was utilized, the findings are that a substantial proportion of AFDC mothers can, through full utilization of earnings and child support capacities, escape poverty. Even under the most

pessimistic wage assumption, one-third of AFDC mothers could garner total incomes of at least \$1000 more than the poverty level. This suggests that encouraging work and enforcing child support has the potential of substantially reducing both welfare dependence and poverty.

The results in Table 8 focus on the more conservative objective of obtaining income only in excess of public assistance and demonstrate, not surprisingly, that a relaxation of optimistic assumptions--full utilization of earnings and child support capacities and the availability of free child care in most cases--produces more pessimistic results. The top panel reproduces the first panel from Table 7, in order to facilitate comparisons. The second is identical to the first except that it is assumed that mothers of children on AFDC work half time rather than full time. This assumption corresponds to either an assumption that these mothers will be able to find only half-time work or that it is deemed appropriate policy to neither encourage nor expect more than half-time work. Moreover, in view of the fact that married women with children are more likely to work half than full time, Ellwood (1986) and others have suggested that half-time work is the appropriate target around which to build policy for low-income single mothers.

Between 54 percent and 80 percent of AFDC mothers cannot gain an income higher than their welfare benefits when they receive full child support and receive free child care more

Table 8

Sensitivity of Results to Assumptions Concerning Hours Worked,
Child Care, and Child Support Collections:
Percentage Distribution within Each Category

	(1)	(2)	(3)	(4)	(5)	(6)	Avg.
1. <u>Full Utilization of Earnings Capacity, Full Utilization of Child Support Capacity, No Payment for Child Care</u>							
Income Less than AFDC plus FS							
Difference > \$1000	23.7	22.9	6.1	5.4	5.9	9.8	12.3
Difference < \$1000	10.1	8.5	6.7	4.8	4.8	8.6	7.3
Income More than AFDC plus FS							
Difference < \$1000	11.4	11.1	7.4	6.5	6.8	8.5	8.6
Difference > \$1000	54.8	57.5	79.8	83.2	82.5	73.0	71.8
2. <u>Half Utilization of Earnings Capacity, Full Utilization of Child Support Capacity, Half Receive Free Child Care</u>							
Income Less than AFDC plus FS							
Difference > \$1000	64.8	60.6	40.9	38.7	40.5	48.7	49.0
Difference < \$1000	15.5	17.4	19.8	15.4	16.3	18.6	17.2
Income More than AFDC plus FS							
Difference < \$1000	9.3	9.8	15.9	17.9	20.4	15.4	14.8
Difference > \$1000	10.3	12.2	23.4	27.9	22.7	17.3	19.0
3. <u>Full Utilization of Earnings and Child Support Capacities, Full Payment for Child Care</u>							
Income Less than AFDC plus FS							
Difference > \$1000	30.1	28.4	10.5	9.1	9.7	15.4	17.2
Difference < \$1000	11.5	10.6	9.6	6.5	6.7	9.0	9.0
Income More than AFDC plus FS							
Difference < \$1000	15.4	14.1	6.1	7.3	7.8	9.0	10.0
Difference > \$1000	43.0	46.9	73.8	77.1	75.8	66.6	63.9

Table 8, continued

	(1)	(2)	(3)	(4)	(5)	(6)	Avg.
<u>4. Full Utilization of Earnings: No Child Support and Full Payment for Child Care</u>							
Earnings Less than AFDC plus FS							
Difference > \$1000	55.1	50.1	27.3	22.7	23.7	36.2	35.9
Difference < \$1000	15.0	15.9	9.8	9.8	12.4	10.4	12.2
Earnings More than AFDC plus FS							
Difference < \$1000	11.2	12.6	12.7	12.0	11.8	15.1	12.6
Difference > \$1000	18.6	21.4	50.1	55.5	52.0	38.4	39.3

Column Key:

- (1) Expected wage conditional on not working, positive bias specification.
- (2) Expected wage unconditioned, positive bias specification.
- (3) Expected wage conditional on working, positive bias specification.
- (4) Expected wage conditional on not working, negative bias specification.
- (5) Expected wage unconditioned, negative bias specification.
- (6) Expected wage, uncorrected OLS.

often than not, but work only half time. If we add in the proportions that could only earn up to \$1000 more than their grant, the range increases to 72 percent and 90 percent. Half-time work on the part of AFDC mothers, even under the most optimistic of assumptions, will not be sufficient to improve the economic circumstances of the vast majority of the AFDC caseload.

The third panel examines full-time work on the part of the AFDC mothers with assured child support. Rather than assume that mothers receive free child care, we now assume that all mothers must pay for care. Although this is an extreme assumption, it is not clear that it is any more extreme than assuming that half will get free care. Once again, the proportion that cannot achieve total incomes higher than their welfare grants is substantially lower in panel 3 than in panel 1. The proportion in the first column increases from 34 percent to 42 percent, as does the proportion in the sixth column, increasing from 18 percent to 24 percent.

The fourth panel presents an even more pessimistic scenario than the third. Like the third panel, all mothers are assumed to work full time and all are assumed to pay for child care. The fourth assumes, however, that no additional child support is paid. This assumption is also extreme, but no more so than the assumption of 100 percent compliance with the Wisconsin child support standard. The results in the fourth panel indicate that between 33 percent and 70 percent of the AFDC

mothers will not be able to garner higher incomes than their welfare grants. The estimate in column 6, 47 percent, is nearly as high as Sawhill's estimate. Similarly, the most optimistic wage imputation in column 4 suggests that 45 percent of all AFDC mothers cannot exceed welfare income by more than \$1000.

The results in Tables 7 and 8 indicate that only under the most optimistic set of assumptions is it possible to believe that the economic circumstances of the overwhelming majority of mothers on AFDC can be improved solely by strengthening work and child support requirements. Even when we assume that 100 percent utilization of both earnings and child support capacities is possible and that half of mothers can obtain free child care, if we also assume that mothers on AFDC are able to earn less on average than their demographic counterparts in the labor force, then more than 30 percent cannot earn an amount equal to their AFDC grant and 46 percent cannot earn their way out of poverty. Similarly, even if we assume full utilization of earnings and child support capacities, but the need to pay for all child care, and that AFDC mothers can earn neither more nor less than their demographic counterparts in the labor force, 24 percent cannot exceed their welfare grants and another 9 percent can exceed their grants by no more than \$1000.

On the other hand, the results also indicate that there is a sizable minority of AFDC mothers who, through full

utilization of both earnings and child support capacities, could both surpass their welfare grants and escape poverty. In view of the fact that some AFDC mothers already receive child support and that those with the highest earnings capacity are the most likely to receive support, the fourth panel in Table 8 is clearly too pessimistic. The first column of the third panel would be a good estimate of a lower bound. According to it, 43 percent can achieve an income at least \$1000 higher than their welfare grant. In short, a balanced assessment suggests that work and child support can improve the circumstances of a large proportion of the AFDC caseload and yet cannot improve matters for a considerable portion of the caseload. Whether the figures are 25 percent and 75 percent, or 75 percent and 25 percent, or 50 percent and 50 percent depends primarily upon whether the analyst wishes to stress that the glass is half empty or half full.

V. SUMMARY AND IMPLICATIONS FOR FUTURE RESEARCH AND POLICY

Estimates of the proportion of AFDC mothers who could obtain an income greater than their welfare grants and escape poverty via work and child support are very sensitive to assumptions about wage rates, work opportunities, child care costs, and the potential efficacy of child support enforcement. Despite the sensitivity of the results to these assumptions, our estimates indicate that there is a sizable

group of AFDC families whose incomes can be increased through work and child support as well as a sizable group of AFDC families whose incomes cannot be improved solely by these means.

The results provide partial support for enforcing work requirements and child support payments, since they suggest that pursuit of these policies could result in the elimination of both welfare dependence and poverty for a significant portion of the AFDC caseload. Furthermore, successful enforcement of child support makes the work obligation a more attractive option by increasing total rewards relative to welfare.

On the other hand, the results provide evidence that, for an AFDC group of considerable size, work and child support alone will be insufficient to raise income beyond the level of public assistance or of poverty. To eliminate both welfare dependence and poverty among this group, it will also be necessary to supplement incomes outside of welfare--through a variety of programs such as child care, refundable tax credits, and assured child support benefits (see Garfinkel and McLanahan, 1986).

We recommend that future research in this area endeavor to incorporate the value of Medicaid into the analysis. Doing so will increase the estimated proportion of the AFDC caseload that needs more than work and child support to leave the AFDC rolls and escape poverty. Future work should also try to

narrow the area of uncertainty. The question of how to correct estimated wage rates for selectivity bias clearly deserves more attention, as do methods for estimating the extent to which AFDC mothers will be able to obtain free child care.

Notes

¹The 1988 Family Support Act is the most important and most recent legislation. It requires all states to adopt child support standards that are the presumptive child support obligations. If judges depart from the standards they must make written justification for doing so, which can be reviewed by higher courts. The states must also adopt laws which require routine withholding of child support obligations from wages and other sources of income in all cases from the outset of the obligation. The 1988 law strengthens paternity establishment in a number of ways. It requires states to increase the proportion of out-of-wedlock cases in which they establish paternity or face fiscal penalties. At the same time the law increases to 90 percent of total costs the federal government's financial responsibility for paying for blood tests associated with establishing paternity. In addition, states are required to obtain the social security numbers of both parents in order to facilitate establishment of paternity. With respect to work, the 1988 law requires that AFDC custodial parents with no children under age 3 (or age 1 at state option) participate in work or training programs provided that child care is available. School attendance is acceptable in lieu of work if the education is expected to lead toward future independence.

²The reader should keep in mind that we analyze income potential. We assume that support is not received only if the father is not employed. Nonpayment of assigned support is considered.

³By excluding households with other adults from our analysis, we exclude subfamilies, an important component of the population of AFDC families. However, the information available from SIPP does not allow us to determine exactly the relationship between the AFDC mother and other adults in the household. In order to avoid complications, we limit our analysis to families living as independent households.

⁴There are fewer than 200 observations for divorced and separated black men in our sample. We therefore estimate one equation which captured racial differences only through a binary variable.

⁵This approach differs from the approach used to estimate an income equation for divorced men. We hypothesized that the income of divorced men might change over time, both as a contributor to divorce and as a consequence of divorce. However, there is no change in the status of never-married men over time. Therefore, a snapshot of these men should be sufficient for estimating an income equation.

⁶In contrast, more than 98 percent of the divorced men in our sample reported positive income. Because of this high

rate of employment, a probit equation was not estimated for divorced and separated men.

⁷The sample contained only 92 black families which paid for child care. Such a small sample would not provide precise estimates of the parameters of the expenditures equations. Therefore, the dummy variable was used to attempt to capture differences in expenditures by race.

⁸We use the Wisconsin Standard in our analysis because of its extensive use nationally and its simple formula. The income-sharing standards which are employed by many states usually provide an initial region of income in which no support is required, but higher marginal rates once support payments are required. We believe that standards of this type would tend to stretch the tails of our imputed distributions, but would not substantially affect the results presented in this section.

⁹According to the Committee on Ways and Means (1986), the AFDC standard benefit for the median state increased by only 71 percent between 1970 and 1985, while the poverty threshold for a family of four increased by 177 percent in the same period.

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