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Child Care Subsidies Increase Likelihood That Low-Income Mothers Will Work

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The Honorable Patricia Schroeder
Co-Chair, Congressional Caucus for
Women's Issues

The Honorable Olympia J. Snowe
Co-Chair, Congressional Caucus for
Women's Issues
House of Representatives

For many years, the Congress has been interested in encouraging low-income mothers to seek employment as an alternative to receiving welfare. These mothers face many challenges in obtaining work and establishing stable and successful work records. They often must acquire additional education and job skills, find a job that is consistent with their skills, and have access to reliable transportation. Another major concern for mothers entering or staying in the labor force is the availability of affordable child care.

Because low-income mothers often must pay for all or part of their child care expenses, the cost of child care remains an employment barrier to many of them. Recognizing this need, the Congress has created four child care programs for low-income families since 1988. Two of them subsidize the child care costs of welfare recipients who are attempting to become self-sufficient through education, training, and employment. Two others provide child care subsidies[1] to working poor nonwelfare families.[2] In addition to paid care, many low-income mothers use informal care—care provided free of charge by relatives or friends.

To better understand the role that child care costs play in the likelihood that low-income mothers will work, you asked us to examine this relationship. Specifically, we determined the probability of poor and

[1]A subsidy can be paid in the form of a voucher for parents to purchase care or a contract with child care providers for a number of slots.

[2]The Aid to Families with Dependent Children (AFDC) Child Care and Transitional Child Care (TCC) programs were included in the Family Support Act of 1988. The At-Risk Child Care Program and the Child Care and Development Block Grant (CCDBG) were authorized by the Omnibus Budget Reconciliation Act of 1990.

near-poor mothers working as their child care expenditures change, as compared with nonpoor mothers.[3]

To estimate the impact of child care expenditures on mothers' decision to work, and to compare the impact among poor, near-poor, and nonpoor mothers, we developed an empirical model using available data from the Urban Institute's 1990 National Child Care Survey.

Results in Brief

Our analysis predicts that reducing child care costs increases the likelihood that poor, near-poor, and nonpoor mothers will work. This effect is strongest for the poor and near-poor mothers. More specifically, our model predicts that providing a full subsidy to mothers who pay for child care could increase the proportion of poor mothers who work from 29 to 44 percent, and that of near-poor mothers who work from 43 to 57 percent. By comparison, the probability of nonpoor mothers working could increase from 55 to 65 percent.

The results of our analysis suggest that among the factors that encourage low-income mothers to seek and keep jobs—factors such as more education, training, and transportation—affordable child care is a decisive one. Thus, any effort to move more low-income mothers from welfare to work will need to take into account the importance of child care subsidies to the likelihood of success.

Background

Child care costs are a significant portion of most low-income working families' budgets. They consumed on average 27 percent of monthly income for families with incomes below poverty who paid for child care in 1991, compared with an average of 7 percent for families with incomes above poverty.[4] According to the Bureau of the Census, the average weekly child care expenditure for all families who paid for care was about $63 in 1991. For families below poverty, that figure was only slightly lower, at about $60.[5]

[3]Poor is defined as at or below the 1989 federal poverty level, near-poor is defined as above 100 percent and up to 185 percent of the federal poverty level, the nonpoor is defined as over 185 percent of the federal poverty level. The federal poverty level for a family of three, consisting of one adult and two children, in 1989 was $9,890.

[4]"Who's Minding the Kids? Child Care Arrangements: Fall 1991," Survey of Income and Program Participation, Current Population Reports, P70-36, U.S. Bureau of the Census (Washington, D.C.: 1991), p. 21.

[5]"Who's Minding the Kids? Child Care Arrangements: Fall 1991," p. 21.

The 1988 Family Support Act (FSA) legislation contained provisions for child care assistance to help welfare recipients obtain employment, leave welfare, and stay employed. FSA requires state agencies to guarantee child care to (1) employed AFDC recipients, (2) participants in the Job Opportunity and Basic Skills (JOBS) Training program, (3) other AFDC recipients in state-approved education and training programs, and (4) AFDC recipients who leave the welfare rolls as a result of increased earnings from employment.

The Congress also recognized the importance of child care assistance to working poor nonwelfare families. The At-Risk Child Care program targets subsidies to non-AFDC working families who would be at risk of becoming eligible for AFDC if child care assistance were not provided. The CCDBG's major purpose is to provide subsidies to low-income working families who need child care to work or to participate in education and training.

Not all families pay for child care. In our sample, 55 percent of poor families used informal child care arrangements. By comparison, the fraction of near-poor and nonpoor families using informal care was 37 and 21 percent, respectively. When paid child care is used, most child care subsidy programs do not cover the full cost. The TCC and At-Risk Child Care programs both use a sliding scale to set their subsidy rates, based on families' ability to pay. The AFDC child care and CCDBG programs authorize a maximum subsidy rate for child care providers or slots in a particular locality. Parents whose costs are below the established rate may be fully subsidized, while parents whose providers charge more than the rate authorized must pay the difference themselves.[6]

Because most mothers do pay for child care while they work, their decision to work is dependent, at least in part, on how much they will make after they have paid child care expenses. Economic theory would suggest that reduced child care expenditures will lead to an increase in the probability that a woman will participate in the labor force. In general, previous studies have found a significant positive effect of child care cost reductions on the labor force participation of mothers. (See app. I for a discussion of these studies.) While some researchers have looked

[6]States are required to periodically conduct studies of the cost of child care in each local community in their state. These studies, called market rate studies, are done for different types of care and for different ages of children. Based on these studies, both programs authorize maximum subsidy rates up to the 75th percentile of the price distribution of local child care providers or slots.

specifically at low-income mothers, there has been no effort to separately study poor and near-poor mothers.[7]

Scope and Methodology

For this study, we used data from a nationally representative sample of households with children—the Urban Institute's 1990 National Child Care Survey. We also included data from the Survey's Low-Income Substudy. Because the survey collected detailed data on child care use, family income, and employment histories of both parents, it was possible to estimate the impact of child care expenditures on mothers' decision to work.

We developed measures of predicted wages and child care expenditures that account for the fact that not all mothers were employed, used child care, or paid for care. We then separated the sample into poor, near-poor, and nonpoor mothers, in order to test whether the effect of child care costs on the decision to work differed across these three groups. We developed estimates under two scenarios—one in which some mothers have access to informal child care and the other in which mothers lose all access to that care. The poor and near-poor samples contain both welfare and nonwelfare families.

As in all empirical analysis, these estimates are limited by the data on which they are based. Uncertainty results as well from the necessity of predicting wages and child care expenditures for poor women from a relatively small sample. Our results, however, are generally consistent with the work of other researchers. Appendix I contains a detailed discussion of this literature.

[7]See Mark C. Berger and Dan A. Black, "Child Care Subsidies, Quality of Care, and the Labor Supply of Low-Income, Single Mothers," Review of Economics and Statistics, Vol. 74, No. 4 (Nov. 1992), pp. 635-642; and Paul Fronstin and Douglas Wissoker, "The Effects of the Availability of Low-Cost Child Care on the Labor Supply of Low-Income Women" (unpublished paper presented at the Annual Meeting of the Population Association of America, Miami, Florida, May 5-7, 1994).

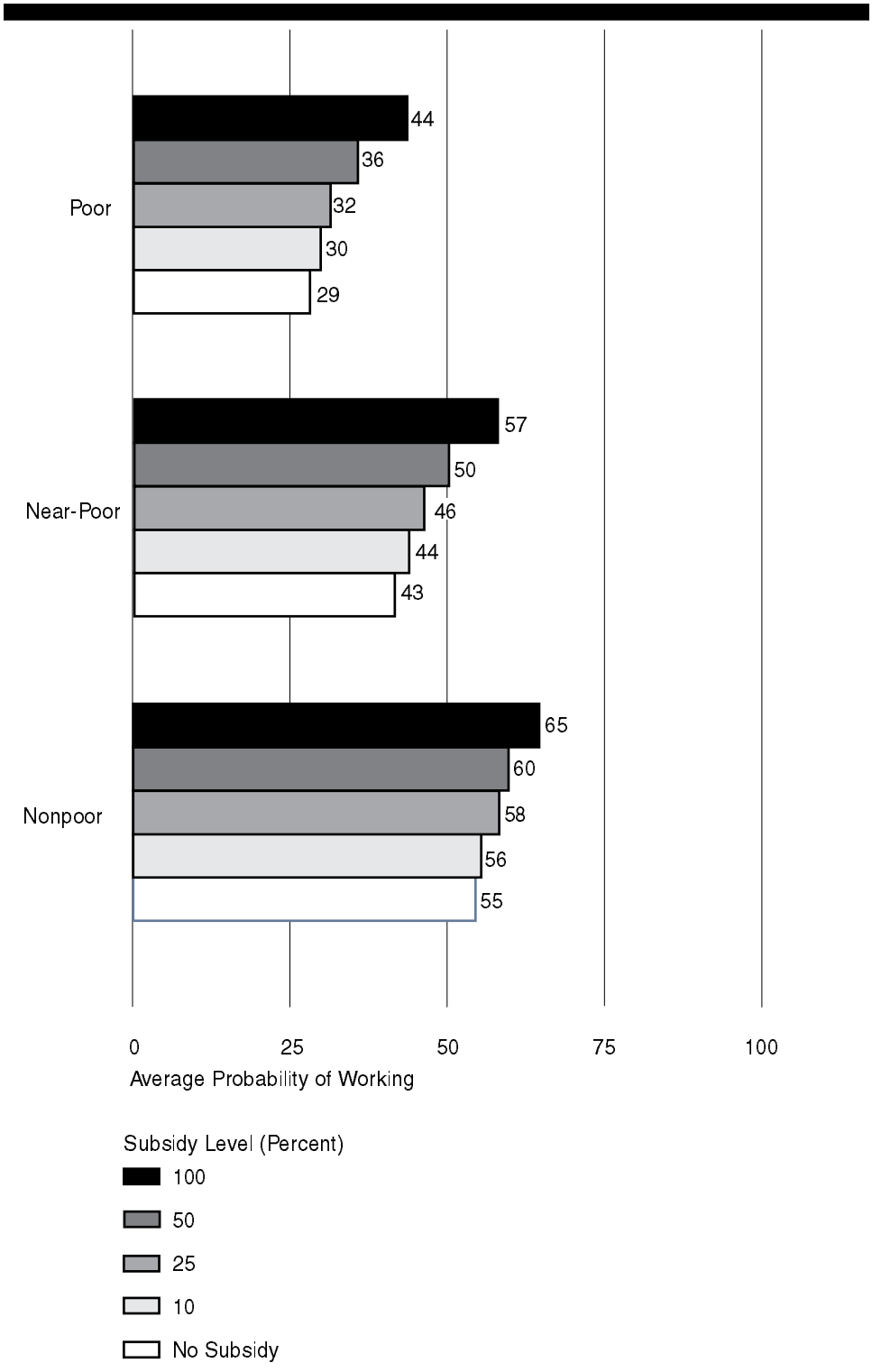
Largest Impact on Decision to Work Comes From Subsidizing Poor and Near-Poor Mothers

Our analysis showed that subsidizing child care costs has the greatest impact on poor and near-poor mothers' decision to work, as compared with nonpoor mothers. When we considered that some mothers use informal care, our model predicted that a full child care subsidy would result in a 15-percentage-point increase in the average probability of poor mothers working.[8] That is, for every 100 poor mothers, the approximate number who work would rise from 29 to 44. For near-poor mothers, our model predicted that a full subsidy of child care costs would lead to a 14-percentage-point increase—a rise in the approximate number who work from 43 to 57 of every 100. For nonpoor mothers, our model predicted that the same full subsidy would increase the approximate number who work by 10 percentage points, from 55 to 65 of every 100.

Taking into account the fact that some mothers receive partial subsidies, we also simulated the response of mothers in each income group to child care subsidy rates of 10 percent, 25 percent, and 50 percent. Figure 1 illustrates the average probability of working for each income group for the different subsidy rates.

[8]These results are indicative only of how the labor supply of mothers would change with a given child care subsidy rate, holding all other variables constant. They do not take into account labor demand changes; short-term lags, gaps, or bottlenecks in the supply of child care; or other changes in economic conditions.

Figure 1: Average Probability of Mothers Working, by Child Care Subsidy Level and Income Group



Supply of Informal Child Care Affects Mothers' Decision to Work

Fifty-five percent of poor mothers in our sample used informal care for their children, compared with 37 percent of near-poor mothers and 21 percent of nonpoor mothers. However, if more mothers who are currently not working decided to enter the labor force or participate in education or training programs, the need for child care would increase. At the same time, informal child care might become less available.

Various welfare reform proposals would encourage mothers to enter the labor force. This would result in an increased demand for child care, causing the price to rise. This, in turn, could draw informal child care providers into the paid child care market, thereby shrinking the supply of informal care. Because mothers who are not currently working may already be less likely to have a source of informal child care, they could be in the position of having to pay for child care if they work.

While it is unlikely that all informal care will ever disappear completely, a decrease in the supply of informal care has implications for the effectiveness of child care subsidies. To demonstrate this point, we considered the extreme case of mothers losing all access to informal care.

When we assumed that mothers have to pay for child care, our model predicted that the probability of poor mothers working would fall 23 percentage points to only 6 percent. That is, when mothers face a market in which there are no informal care options and no child care subsidy, the model predicted approximately 6 of every 100 poor mothers would continue to work. Under the same conditions, our model predicted that approximately 18 of every 100 near-poor mothers and 44 of every 100 nonpoor mothers would continue to work.

With a child care subsidy, however, the number of mothers predicted to work would rise until, with a full subsidy, the number reached 44 percent for poor mothers, 57 percent for near-poor mothers, and 65 percent for nonpoor mothers. This reflects the fact that with a full child care subsidy, some mothers are no longer dependent on informal care to enter the work force.

Conclusions

Child care subsidies are predicted to make a substantial difference in the probability of poor and near-poor mothers working, especially if informal child care becomes less available. These findings are important for understanding how to help both current welfare recipients enter the labor force and working poor families remain off the welfare rolls.

Our work was based on information we developed using available data from the 1990 National Child Care Survey. As a result, we did not obtain agency comments on this report. We are sending copies of this report to the Secretary of Health and Human Services and to other interested parties. We will also make copies available to others on request.

Major contributors to this report are listed in appendix II. If you have any questions concerning this report or need additional information, please call me on (202) 512-7215.

Jane L. Ross
Director, Income Security Issues

Contents

Abbreviations

AFDC	Aid to Families with Dependent Children program
CCDBG	Child Care and Development Block Grant
FSA	Family Support Act of 1988
IMR	Inverse Mills Ratio
JOBS	Job Opportunities and Basic Skills Training program
SIPP	Survey of Income and Program Participation
TCC	Transitional Child Care program

Economic Analysis of the Effect of Child Care Subsidies on Mothers' Decision to Work

To study how child care expenditures affect the probability of mothers working, we adopted an economic model of the decision by women with children to explicitly include child care costs. From a theoretical model of mothers' labor force participation, we derived an empirical model and used data from the Urban Institute's National Child Care Survey and Low-Income Substudy to test the effect of child care expenditures on the probability of poor, near-poor, and nonpoor mothers working. We tested this empirical model using a two-stage procedure to correct for possible sample selection bias in the prediction of mothers' hourly wage and weekly child care expenditures. Our results indicated that predicted child care expenditures have a negative and significant effect on the probability of mothers working in each income group, and the effect is largest for the poor and near-poor mothers. This result is true when we assumed that some mothers use informal care, and it became even more substantial when we assumed that no mothers use informal care.

Theoretical Model

We adopted our model of the labor force participation decision for a mother with children from work by Dr. Rachel Connelly of Bowdoin College.[9] In the Connelly model, the labor force participation decision is assumed to be the outcome of a mother's maximization of her utility over a composite market good, X; child quality, Q; and leisure, t_L; subject to a production function for Q; a money budget constraint; and two time constraints, one for herself and one for the children. The production of child quality is a function of the amount of time the mother spends with her child, t_Q; the amount of time spent in child care, t_{CC}; and the quality of that care, q. It is also dependent on the number of children in the family, N, and the ages of the children, A.

The utility function, production function, and budget constraints are specified in the following set of equations:

$$U = U(X_m, Q, t_L)$$

$$Q = Q(t_Q, t_{CC}q; N, A)$$

$$t_m W + V = X_m + P_{CC} t_{CC}$$

$$t_m + t_Q + t_L = 1$$

$$t_Q + t_{CC} < 1$$

[9]Rachel Connelly, "The Effect of Child Care Costs on Married Women's Labor Force Participation," Review of Economics and Statistics, Vol. 74, No. 1 (Feb. 1992), pp. 83-90.

where t_m is time in market work, t_L is leisure time, W is the market wage, V is nonlabor income (including the husband's earnings), and P_{CC} is the hourly price of child care ($P_{CC} = P(q, N, A)$).

One of the first order conditions for the maximization problem is given as

$$\frac{U_L}{U_X} = W = \frac{U_Q}{U_X}\,(Q_1 - Q_2\,q^*) + P^*_{CC}$$

where P_{CC}^* is the price of child care at the optimally chosen level of quality, q^*. The third expression is the net benefit of t_Q, which depends on the net benefit to Q of parental child care versus nonparental child care time and the P_{CC}^* ,which is the money savings of an hour of t_Q.

Connelly's model predicts that for those women who participate in the labor market, their market wage will be equal to both the value of their leisure time and the value of the time they spend caring for their children. It is then possible to derive an equation for time in market work for mothers that is a function of the mother's market wage, the price of child care, and a set of individual and family characteristics that affect the marginal rate of substitution between goods and leisure and the production of child quality.

Predicting Hourly Wages and Weekly Child Care Expenses

We estimated the parameters of the time in market work equation described above using a limited dependent variable model, such as probit, where I = 1 if $t_m > 0$, and 0 otherwise. However, because some mothers in the sample were not earning a wage at the time of the survey, and some were either not using or not paying for child care, it was necessary first to predict wages and child care expenditures for these mothers. We did this by using information about the mothers in the sample who were earning a wage and those who were paying for child care to predict wages and expenditures for those who were not. These predicted wages and expenditures could be biased, however, if there were some unobserved differences between the working and nonworking mothers or the paying and nonpaying mothers. This problem is known as sample selection bias. We corrected for possible sample selection bias using a standard two-stage Heckman procedure.[10] We first estimated a reduced form probit equation

[10]For a detailed explanation of this procedure see James J. Heckman, "Sample Selection Bias as a Specification Error," Econometrica, Vol. 47, No. 1 (Jan. 1979), pp. 153-161.

to calculate a statistical correction factor, known as the Inverse Mills Ratio (IMR). We estimated separately the reduced form probits of the probability of working and the probability of paying for child care and constructed an IMR from each set of reduced form coefficients. We then included the IMR as an additional variable in our estimates of wages for those mothers who were working at the time of the survey, and child care expenditures for those mothers who paid for child care. We used the coefficients from these estimates to calculate an unbiased and consistent predicted wage and predicted weekly child care expenditure for each mother in the sample.

First Stage Estimation of Hourly Wage

In the first stage of estimation, we estimated a correction term to correct for the possible bias introduced by the fact that hourly wages are not observed for nonworking women. The estimation of the IMR involved first estimating a reduced form probit of the probability that a woman was working in the week before the survey. That is, we estimated work status as a linear function of all of the exogenous variables in the model.

LFPART = fn (RACE,UND6,KID612,EDUC,WRKEXPER,EXPSQR, MARRIED,SPDVWD,URBAN,SUBURB,NORCENTR, NOREAST,WEST,KID1318,OTHADLT,UNEMADLT,OTHINCOM)

Table I.1 gives a complete definition of each variable. The omitted category for the marital status variable is the never married category; for the variables measuring urbanicity, the omitted category is the rural category; and for the regional variables, the Southern region is the omitted category. Table I.2 gives descriptive statistics for mothers in each of the three income groups. We estimated the reduced form probit and subsequent wage over the entire sample of poor, near-poor, and nonpoor women. This is the same as assuming that all of the women in the sample faced the same labor market, regardless of their family income.

Second Stage Estimation of Hourly Wage

We then calculated the IMR term using the estimated coefficient vector from the probit equation on the probability of working. We included the IMR in the Ordinary Least Squares estimate of the natural log of wages for the sample of women who were currently working. This is a standard wage equation, based on human capital variables and a set of variables controlling for region and urbanicity of residence.

HREARN = fn (RACE,EDUC,WRKEXPER,EXPSQR,URBAN,SUBURB, NORCENTR,NOREAST,WEST,IMR1)

The coefficients from this selection-corrected wage estimation were then used to calculate predicted natural log wages for all women in the sample. For women who were not currently working, this predicted wage can be thought of as the wage they would be expected to earn if they were working.

In the same way, weekly child care expenditures were estimated for all women in the sample, correcting for the possible bias introduced by the fact that not all women either used or paid for child care. The estimation involved estimating a reduced form probit of the probability that a woman paid for child care in the week before the survey. We did this estimation separately for poor, near-poor, and nonpoor women because we assumed that the child care market, which is much more local than the labor market, may be very different for women with different levels of family income.

First Stage Estimation of Weekly Child Care Expenditure

We assumed that a woman's decision to pay for child care is affected by the number of children she has and their ages, her own education, race, and marital status, the presence of other adults in the household and their employment status, and the set of variables controlling for region and urbanicity of residence.

PAYCARE = fn (UND6,KID612,KID1318,EDUC,OTHINCOM,OTHADLT, UNEMADLT,URBAN,SUBURB,NORCENTR,NOREAST,WEST,RACE, MARRIED,SPDVWD)

Second Stage Estimation of Weekly Child Care Expenditure

Using the coefficients from this equation, we constructed an IMR term and included it as an explanatory variable in an Ordinary Least Squares estimation of weekly child care expenditures for the families that paid for nonparental care. Again, we made these estimates separately for poor, near-poor, and nonpoor women because expenditures on child care are expected to differ systematically among the three income groups. We assumed that the amount that women must pay for child care is a function of the number and ages of the children, the woman's own race and education level, the presence of others in the household, and the set of variables controlling for region and urbanicity of residence.

WKEXPEND = fn (UND6,KID612,KID1318,RACE,EDUC,OTHINCOM, OTHADLT,URBAN,SUBURB,NORCENTR,NOREAST,WEST,IMR2)

We did this selection correction because there may be unobserved differences between mothers who pay for care and those who do not that are not accounted for in the observed characteristics included in the model. The coefficients from the selection-corrected expenditure estimation were then used to calculate predicted child care expenditures for all women in the sample, conditional on the mother actually using formal care ($E(P_{CC}|P_{CC} >0)$). We multiplied this conditional child care expenditure by the probability that a mother would actually use formal care to arrive at the unconditional predicted child care expenditure ($E(P_{CC})$). This unconditional predicted child care expenditure can be thought of as the price of child care women face in considering employment, given the current availability of informal child care possibilities.

Estimating the Probability of Working

In this stage, we estimated a structural probit of the probability that a woman will work, including as independent variables the predicted natural log wage and the predicted weekly child care expenditure, as well as a set of variables that may affect the decision to work separately from the wage and expenditure variables. These include variables such as race, marital status, number of children under 6 and between 6 and 12, and urbanicity of residence.

LFPART = fn (LNWGHAT,CCEXP,RACE,MARRIED,SPDVWD,UND6, KID612,URBAN,SUBURB).

Data Source

We used data from the Urban Institute's 1990 National Child Care Survey, a nationally representative sample of 4,392 households with children. We merged this main sample with the Urban Institute's Low Income Substudy, a companion sample of 430 households with family income below $15,000, in order to have enough cases to study poor and near-poor mothers separately. Our sample included all mothers between ages 18 and 64 with at least one child under age 13 present in the household. Households without a mother present or missing information about the mother's education, race, work experience, or earnings were not included in the sample. Our final sample of 3,930 mothers was further divided by total family income into three groups—poor mothers, with family income at or below the 1989 federal poverty level; near-poor mothers, with family

income above 100 and up to 185 percent of the federal poverty level; and nonpoor mothers, with family income above 185 percent of the federal poverty level. Because women in different income groups may face different markets for child care, it is important to estimate their child care expenditure, and its impact on their decision to work, separately.

Empirical Results

Table I.7 presents the results of the structural probit of the probability of working. For all three income groups, we found that the predicted child care expenditure (CCEXP) has a negative effect on the mothers' probability of working. This effect is statistically significant for poor mothers at the .025 level, and for near-poor and nonpoor mothers at the 0.01 level.[11] In addition, for all three income groups, the natural log of hourly wage (LNWGHAT) has a positive effect on the probability of mothers working, but this effect is significant for the nonpoor mothers only, at the 0.10 level.

Looking at the individual and family characteristic variables, we found some similarities as well as some interesting differences across the three income groups. According to this model, race has no significant impact on the probability of mothers working in any of the three income groups. For all three income groups, currently married women (MARRIED) have a lower probability of working, and separated, divorced, or widowed women (SPDVWD) have a higher probability of working. These results are significant at least at the 0.05 level in every case except for the effect of being currently married on the probability of poor women working.

The number of children under age 6 (UND6) has a negative and significant effect[12] on the probability of working for poor and nonpoor women,[13] and a positive but insignificant effect on the probability of working for near-poor women.

Calculating Average Probability of Working

The coefficients from this structural probit allowed us to calculate the average probability of working for each income group. We call this the baseline probability of working (see row 1 in table I.8). For poor mothers, our model predicted that this baseline probability is 29 percent—that is, an

[11]An estimate is considered statistically significant if the probability is low that the true value of the coefficient is zero. In the case of near-poor and nonpoor mothers, the probability of the true coefficient being zero is no greater than 0.01.

[12]The variable is significant at the 0.01 level for nonpoor women and at the 0.10 level for poor women.

[13]The variable is significant at the 0.01 level for nonpoor women and at the 0.10 level for poor women.

estimated 29 of every 100 poor mothers are working. Near-poor mothers have an estimated 43 percent baseline probability of working, and for nonpoor mothers the estimated baseline probability of working is 55 percent.

Calculating the elasticity of the probability of working due to a change in child care expenditure gave us a measure of the sensitivity of mothers' decision to work to child care expenditures. This price elasticity of employment is –0.50 for poor women, –0.34 for near-poor women, and –0.19 for nonpoor women. Thus, a 1 percent decrease in child care expenditures results in a 0.50 percent increase in the average probability of working for poor mothers. Near-poor and nonpoor mothers' responses are smaller.

Child Care Subsidy Simulations

Following the work of Connelly,[14] and as another measure of the sensitivity of the probability of mothers working to changes in child care expenditures, we simulated varying levels of child care subsidies for the women in the samples and calculated how their average probability of working would change. We first multiplied the predicted child care expenditure value for each woman (CCEXP), by different subsidy rates (10-percent, 25-percent, 50-percent, and 100-percent subsidies). We then recalculated the average probability of working using the original beta coefficients from the structural probits and the new child care expenditure values created by each subsidy. Rows 2 through 5 in table I.8 present the new average probabilities of working predicted by our model, given the different subsidy rates. These values can be interpreted as the new average probability that a woman in a specific income group will work, if all other variables are held constant and only her child care expenditures are changed.

The Effect of Welfare Reform Proposals on Informal Care

Legislative proposals for welfare reform have focused on requirements for many more mothers on welfare to participate in education and training; some of these proposals would also place a 2-year cap on recipients' ability to receive welfare without working. These new requirements could mean an increase in the number of low-income mothers in the workforce and, thus, an increased demand for child care. These new entrants to the workforce may be less likely to have a source of informal care than the mothers who are already working. In addition, some of these mothers may

[14]See Rachel Connelly, "The Effect of Child Care Costs on Married Women's Labor Force Participation," pp. 83-90.

be women who formerly provided informal care to other low-income mothers. Their entrance into the workforce, therefore, both increases the demand for care and decreases the supply of informal care at the same time. Economic theory suggests that as the demand for child care increases, the price of formal care will rise. This, in turn, will raise the opportunity cost of informal care providers and draw more of them into the formal child care market, further decreasing the supply of informal care. The end result for low-income mothers of an increase in the demand for child care and a decrease in the supply of informal care may be that more of them are forced to pay for child care while they work.

Calculating Average Probability of Working Using the Conditional Child Care Expenditure

To simulate the decision-to-work response of mothers in the three income groups when they have no access to informal care, we recalculated the average probability of working using the coefficients from the estimated structural probit reported in table I.7 and the conditional child care expenditure ($E(P_{CC}|P_{CC} >0)$). Row 6 in table I.8 demonstrates how much the average probability of working falls when mothers face the full cost of child care expenditures with no access to informal care. Once child care subsidies are provided, however, the probability of working once again begins to rise, until, with a 100-percent subsidy, it reaches the same probability level as in the unconditional case, as can be seen in row 7 of table I.8.

Comparison With the Literature

If we compare the results of this analysis with those of other researchers who have done similar work, we find that they are quite consistent, allowing for the differences in the populations studied.

Connelly calculated a price elasticity of employment of –0.20 for her sample of married women, using data from the 1984 Panel of Survey and Program Participation (SIPP).[15] She also simulated how a 100-percent child care subsidy would affect the probability of employment for the women in her sample. She calculated an increase in probability of employment from a mean of 58.8 percent to 68.7 if mothers received a 100-percent child care subsidy.

Blau and Robins calculated a price elasticity of –0.38, also on a sample of married women only, using data from a 1980 household survey of the

[15]See Rachel Connelly, "The Effect of Child Care Costs on Married Women's Labor Force Participation," pp. 83-90.

Employment Opportunity Pilot Projects.[16] Using the same 1984 SIPP data as Connelly, Ribar calculated a price elasticity for married women of –0.74,[17] while Gustafsson and Stafford, using data on married women in Sweden, calculated a price elasticity of employment of –0.872. None of these studies looked separately at single mothers.

A recent study by Kimmel examined single mothers and married mothers separately.[18] Kimmel, using SIPP data from the 1987 panel, calculated a price elasticity of employment of –0.521 for single mothers, and –0.309 for married mothers. Kimmel's results of a higher price elasticity for single mothers than married mothers are particularly relevant, since single mothers are more likely to be low-income.[19] Kimmel also calculated mean predicted probability of labor force participation for single mothers currently receiving AFDC support. She found that the baseline predicted probability of labor for participation was 0.121 but that it rose to a predicted probability of 0.462 when child care expenditures are subsidized at 100 percent. This last result is very similar to the predicted probability calculated for poor women in our sample under the same conditions of a simulated 100-percent subsidy.

Limitations of the Study

As in any empirical analysis, there is a level of uncertainty around each of the estimates presented here. The 1990 National Child Care Survey has both strengths and limitations. The detailed information on characteristics of parents, including their education and employment as well as the level of detail in the child care use data, make this data set very useful for answering questions about child care and employment decisions of mothers. However, less specific data on expenditures for all the children in the household, especially in terms of identifying when there are multiple child care arrangements, which arrangements were for formal care, and which were for informal care, may mean that our predicted child care expenditure variables could be biased.[20]

[16]David M. Blau, and Philip K. Robins, "Child Care Costs and Family Labor Supply," Review of Economics and Statistics, Vol. 70, No. 3 (1988), pp. 374-381.

[17]David C. Ribar, "Child Care and the Labor Supply of Married Women." The Journal of Human Resources, Vol. 27, No. 1 (Winter 1992), pp. 134-165.

[18]Jean Kimmel, "Child Care and the Employment Behavior of Single and Married Mothers," Staff Working Paper #92-14, W.E. Upjohn Institute for Employment Research (1992).

[19]In our sample, only 30 percent of poor women are married. (See app. I, table I.2).

[20]If the number of hours that children are in care includes both formal and informal care, predicted child care expenditures could be underestimated.

In addition, our sample included relatively low numbers of poor women who were employed and who used formal care for their children. Because predicted wages and predicted child care expenditures had to be estimated for a large portion of the poor mothers' sample, the estimates may be more imprecise.[21] However, the strong significance of the predicted child care expenditure variable in the structural probit on probability of working gave us some confidence in, especially, the direction and relative magnitude of our findings in terms of the impact of child care expenditures on mothers' employment decisions.

[21]This may be one reason why the effect of predicted wages on the probability of working for poor women is not statistically significant, as shown in table I.7.

Table I.1: Variable Definitions

Variable	Definition	Variable	Definition
UND6	Number of children under age 6 in the household	SPDVWD	Equals one if separated, divorced, or widowed
KID612	Number of children aged 6-12 in the household	KID1318	Equals one if there is a child aged 13-18 present in the household
EDUC	Years of formal education	OTHINCOM	Equals one if the household has income from any source other than respondent's or spouse's earnings
WRKEXPER	Years of work experience, defined as age minus years of education minus 6	OTHADLT	Equals one if there is another adult in the household besides the respondent (and spouse, if married)
EXPSQR	Years of work experience squared	UNEMADLT	Equals one if there is an unemployed adult in the household besides the respondent (and spouse, if married)
URBAN	Equals one if respondent lives in an urban area	LFPART	Equals one if respondent was employed and earning a nonzero wage in the previous week
SUBURB	Equals one if respondent lives in a suburban area	PAYCARE	Equals one if the respondent paid for child care in the previous week
RACE	Equals one if respondent is white.	HREARN	Hourly wage of respondent
WEST	Equals one if respondent lives in Western region	LNWGHAT	Predicted log hourly wage of respondent
NORCENTR	Equals one if respondent lives in North Central region	WKEXPEND	Weekly child care expenditure for all children
NOREAST	Equals one if respondent lives in Northeastern region	CCEXP	Predicted unconditional weekly child care expenditure
MARRIED	Equals one if respondent is currently married	EXPHAT	Predicted conditional weekly child care expenditure

Table I.2: Descriptive Statistics for Poor, Near-Poor, and Nonpoor Mothers (Unweighted Samples)

	Poor (n=541)	Near-poor (n=585)	Nonpoor (n=2804)
Age	30.10	31.00	33.20
Education (years)	11.60	12.20	13.70
Work experience (years)	12.40	12.90	13.50
Number of children under age 6	0.85	0.79	0.69
Number of children aged 6-12	1.20	1.20	0.990
Percent white	62.00	80.00	92.00
Percent married	30.00	61.00	89.00
Percent separated, divorced, or widowed	39.00	26.00	8.00
Percent never married	31.00	13.00	3.00
Percent in labor force	29.00	43.00	55.00
Percent pay for child care	24.00	30.00	45.00
Percent urban	37.00	33.00	38.00
Percent suburban	23.00	29.00	37.00
Percent rural	40.00	38.00	25.00
Percent in Western region	18.00	24.00	19.00
Percent in Southern region	45.00	38.00	32.00
Percent in North-Central region	23.00	25.00	28.00
Percent in Northeastern region	14.00	13.00	21.00

Table I.3: Reduced Form Probit of Labor Force Participation Decision

Variable	Estimated coefficient	Standard error	T-statistic	Mean value
CONSTANT	–1.187	0.161	–7.369	1.00
UND6	–0.244	0.033	–7.377	0.72
KID612	–0.229	0.029	–8.013	1.05
KID1318	–0.039	0.060	–0.647	0.22
EDUC	0.084	0.010	8.565	13.20
WRKEXPER	0.062	0.011	5.452	13.24
EXPSQR	–0.002	0.000	–4.374	216.26
URBAN	–0.073	0.053	–1.381	0.37
SUBURB	–0.042	0.053	–0.795	0.34
RACE	0.015	0.066	0.225	0.86
WEST	–0.115	0.060	–1.917	0.19
NORCENTR	–0.072	0.054	–1.344	0.27
NOREAST	–0.087	0.060	–1.438	0.19
MARRIED	0.083	0.086	0.962	0.77
SPDVWD	0.307	0.095	3.218	0.15
OTHINCOM	–0.071	0.042	–1.687	0.47
OTHADLT	0.272	0.091	2.989	0.15
UNEMADLT	–0.334	0.109	–3.073	0.09

N = 3,930. Log likelihood ratio = 255.08.

Table I.4: Ordinary Least Squares Estimation of Log of Hourly Wage, Corrected for Selection Bias

Variable	Estimated coefficient	Standard error	T-statistic
CONSTANT	0.0290	0.1840	0.156
RACE	0.0540	0.0390	1.404
EDUC	0.1300	0.0080	16.687
WRKEXPER	0.0200	0.0080	2.649
EXPSQR	–0.0003	0.0002	–1.502
URBAN	0.2670	0.0330	8.155
SUBURB	0.1620	0.0320	5.023
WEST	0.0010	0.0380	0.032
NORCENTR	–0.0570	0.0340	–1.702
NOREAST	0.0670	0.0370	1.804
IMR1	–0.0400	0.0940	–0.427

N= 1,950. R^2 = 0.249.

Table I.5: Probit Estimation of the Probability of Paying for Child Care Services

Variable	Poor estimated coefficient (standard error)	Near-poor estimated coefficient (standard error)	Nonpoor estimated coefficient (standard error)
CONSTANT	–1.249 (0.402)	–1.384 (0.402)	–1.135 (0.229)
UND6	0.054 (0.088)	0.141 (0.086)	0.085 (0.041)
KID612	–0.014 (0.070)	0.001 (0.069)	–0.079 (0.036)
KID1318	0.093 (0.164)	–0.191 (0.160)	–0.092 (0.070)
EDUC	0.056 (0.029)	0.061 (0.028)	0.102 (0.012)
OTHINCOM	–0.051 (0.126)	0.262 (0.119)	0.009 (0.050)
OTHADLT	–0.167 (0.262)	0.282 (0.209)	0.097 (0.111)
UNEMADLT	–0.016 (0.288)	–0.244 (0.263)	–0.203 (0.139)
URBAN	–0.180 (0.151)	–0.174 (0.143)	0.156 (0.065)
SUBURB	–0.141 (0.165)	0.061 (0.141)	0.190 (0.064)
WEST	0.012 (0.189)	0.116 (0.157)	–0.158 (0.072)
NORCENTR	–0.085 (0.170)	0.112 (0.151)	–0.168 (0.063)
NOREAST	0.087 (0.201)	0.059 (0.188)	–0.301 (0.069)
RACE	–0.024 (0.156)	0.028 (0.160)	0.070 (0.091)
MARRIED	–0.532 (0.198)	–0.451 (0.188)	–0.468 (0.149)
SPDVWD	0.315 (0.162)	0.283 (0.188)	0.054 (0.169)
N	541	585	2804
Log likelihood ratio	38.5	55.1	169.4

Table I.6: Ordinary Least Squares Estimation of Weekly Child Care Expenditures, With Correction for Selection Bias

Variable	Poor estimated coefficient (standard error)	Near-poor estimated coefficient (standard error)	Nonpoor estimated coefficient (standard error)
CONSTANT	10.453 (41.57)	15.97 (25.96)	4.849 (23.15)
UND6	1.847 (6.256)	18.236 (3.519)	17.432 (2.388)
KID612	6.021 (4.43)	–1.612 (2.937)	–1.220 (2.26)
KID1318	–5.112 (9.977)	–7.788 (7.316)	–16.26 (4.151)
RACE	8.922 (9.067)	–1.001 (5.993)	7.410 (4.736)
EDUC	0.234 (1.983)	2.3187 (1.334)	2.688 (0.982)
OTHINCOM	6.896 (8.143)	–5.727 (5.692)	0.945 (2.739)
OTHADLT	–1.757 (10.9)	–2.034 (6.79)	2.289 (4.606)
URBAN	14.106 (10.12)	12.485 (6.032)	16.696 (4.038)
SUBURB	12.044 (10.639)	0.961 (5.864)	6.39 (4.021)
WEST	3.529 (12.274)	–3.484 (6.369)	1.299 (4.118)
NORCENTR	–3.275 (11.58)	0.269 (6.123)	–6.013 (3.669)
NOREAST	12.818 (12.846)	–3.120 (7.773)	2.980 (4.579)
IMR2	–2.901 (18.769)	–16.044 (11.15)	–16.97 (12.64)
N	129	176	1262
R^2	0.077	0.254	0.168

Table I.7: Structural Probit Estimation of Labor Force Participation Decision of Mothers With Young Children

Variable	Poor estimated coefficient (standard error)	Near-poor estimated coefficient (standard error)	Nonpoor estimated coefficient (standard error)
CONSTANT	–0.603[a] (0.428)	0.078 (0.398)	0.606[c] (0.240)
LNWGHAT	0.292 (0.249)	0.260 (0.224)	0.175[a] (0.116)
CCEXP	–0.046[c] (0.023)	–0.022[d] (0.009)	–0.009[d] (0.003)
RACE	–0.070 (0.145)	–0.094 (0.143)	–0.078 (0.090)
MARRIED	–0.155 (0.217)	–0.520[d] (0.196)	–0.258[b] (0.153)
SPDVWD	0.638[d] (0.180)	0.298[a] (0.185)	0.381[c] (0.171)
UND6	–0.116[a] (0.089)	0.082 (0.111)	–0.137[d] (0.052)
KID612	0.009 (0.073)	–0.038 (0.064)	–0.215[d] (0.037)
URBAN	–0.420[c] (0.150)	–0.232[b] (0.141)	–0.020 (0.071)
SUBURB	–0.158 (0.157)	–0.120 (0.134)	–0.016 (0.066)
N	541	585	2804
Log likelihood ratio	32.998	32.954	102.83

[a]Statistically significant at the 0.100 level.

[b]Statistically significant at the 0.050 level.

[c]Statistically significant at the 0.025 level.

[d]Statistically significant at the 0.010 level.

Table I.8: Average Probability of Labor Force Participation for Poor, Near-Poor, and Nonpoor Mothers

	Poor (percent) n=541	Near-poor (percent) n=585	Nonpoor (percent) n=2,804
Baseline probability	29	43	55
10% subsidy	30	44	56
25% subsidy	32	46	58
50% subsidy	36	50	60
100% subsidy	44	57	65
Baseline probability with conditional price	6	19	44
Conditional price with 100% subsidy	44	57	65

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