CHILD CARE AND THE EMPLOYMENT BEHAVIOR OF SINGLE AND MARRIED MOTHERS

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ABSTRACT

This paper examines the relationship between the cost of child care and the employment behavior of married and single mothers. The data used in this paper are from the 1987 SIPP, the first SIPP panel to utilize an improved probing of child care usage and expenditures. A primary contribution of this paper stems from the use of these improved child care data. A second contribution is to provide a clear comparison between single mothers and married mothers. A third contribution of this paper is its detailed discussion of participation elasticities, with a comparison of elasticities derived from different measures of the price of child care. This permits a meaningful comparison between the different child care price elasticities reported by different child care researchers in recent years.

The paper's primary estimating equations examine the impact of changes in the market wage and the hourly price of child care on employment and hours of paid child care. The most fundamental result described in this paper is that increases in the market wage significantly increase the probability of labor force participation for married and single mothers, while increases in the price of care reduce the probability of labor force participation.

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I. INTRODUCTION

This paper examines the relationship between the cost of child care and the employment behavior of married and single mothers. The data used in this paper are from the 1987 SIPP, the first SIPP panel to utilize an improved probing of child care usage and expenditures. A primary contribution of this paper stems from the use of these improved child care data. A second contribution is to provide a clear comparison between single mothers and married mothers. A third contribution of this paper is its detailed discussion of participation elasticities, with a comparison of elasticities derived from different measures of the price of child care. This permits a meaningful comparison between the different child care price elasticities reported by different child care researchers in recent years.

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Child Care, Employment Behavior and Public Policy

The labor force participation behavior of parents is inextricably linked with the availability of affordable, quality child care. Particularly for mothers (and more so for single mothers), insufficient child care options can be a strong barrier to labor force participation. This pessimistic scenario is precisely the situation described by Cattan in the October 1991 Monthly Labor Review, and repeated below.

> *"…many young mothers who were not employed reported that difficulty obtaining child-care was the major reason they were unable to enter the labor force. This was particularly true for poor mothers. Paying for child care was not a realistic long-term option for most poor mothers, and this restricted the child care available to them. This implies a 'catch-22' situation: without child care, they could not look for work, and without work they could not pay for child care."*[1] (page 7)

[1]As has been pointed out by other authors (for example, Blau 1991), it is likely that this self-reporting of what "would have been, had child care been available" is probably an overstating of the actual child care availability problem.

Additionally, there is a strong link between employment and poverty status: 82 percent of female-headed households in which the mother works fulltime do not live in poverty; however, fewer than one-half of female heads were employed fulltime in 1991. Therefore, it is likely that a policy initiative designed with the goal of strengthening the labor force attachment of female household heads would also substantially raise the living standards of these households. Foley (1992) provides the most recent evidence regarding the poverty crisis facing female household heads. Foley shows that approximately 20 percent of all American households are headed by women, of which 47 percent have income below the poverty line, and 25 percent live between the poverty line and two times the poverty line.

The poverty crisis facing female heads is clearly at the forefront of the domestic policy agendas of most industrialized nations. For example, one component the (U.S.) Family Support Act of 1988 addressed the availability of transitional benefits (specifically, extended Medicaid coverage and child care assistance) for female heads trying to work their way off AFDC support.[2] However, no research on female heads has been conducted to date that thoroughly models the full costs of employment. This paper focusses on child care, a primary factor associated with female employment behavior.

Evidence of the link between extended transitional benefits and labor force attachment can be seen in the GAO's June 1992 Report to Congress regarding specific actions needed to improve upon JTPA participant support services. A summary of the GAO's findings are below.

> *"In the five SDAs (local service delivery areas) we studied, participants who needed and received one specific support service, namely child care, achieved better program outcomes than those who did not receive needed support. Participants at the five SDAs we visited who were single parents with a child under age 6 and who enrolled in a training activity were presumed to need child care services. We found that the single parents who received child care assistance, whether through JTPA or elsewhere, more often successfully completed their training and more often obtained jobs or experienced another positive outcome, such as returning to school, than those who did not (see Fig. 1). About 69 percent of single parents who received child care completed their training compared to 45 percent for those not receiving such care. Similarly, about 68 percent of those receiving child care got jobs or had other positive outcomes, such as completing a major level of education, compared to 49 percent of those not receiving child care."*[3]

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[2]The potential impact of extending transitional benefits is part of the research agendas of major research groups. See for example, Bell and Grover (1992) of Abt Associates and Sonenstein, et al (1990) of SysteMetrics for examples of these investigations.

[3]Note that these mothers were not assigned child care assistance randomly, so there is likely some self-selection in the process. In other words, it is likely that mothers who pursued and obtained child care assistance are in some consistent way different from those mothers who did not manage to obtain

The Role of Child Care Quality in the Public Policy Debate

As evidenced by the growing literature linking child care issues to public policy, a consensus exists amongst most of today's policy-makers that the government should play some role in the child care market. James Walker (1991) presents a concise argument for the possible causes of government interest in the child care market. As he discusses, if the child care market is imperfect (i.e., suffers from inefficiencies or inequities), then the government has a motivation for intervening in the market's provision of child care services. By definition, the existence of a perfect market requires that several conditions hold, including the perfect flow of information between the supply and demand sides of the market. Many child care researchers claim that demanders of child care services are unable to procure sufficient information regarding the quality of child care. If there is reason to believe that the government can improve this communication failure, then the government has a clear reason for intervening in the child care market. According to Kisker and Maynard (1991), the government's advantage lies in its access to relevant research and its ability to use this information to formulate child care policies, including tax credits, regulations, and licensing standards. An important caveat is the recognition that specific policies create incentives that alter child care demands, so policy makers must be certain that the underlying quality of the information is accurate and sufficiently comprehensive.

The presence of a public good also opens up the possibility of market inefficiencies.[4] If the benefits of high-quality, readily-available child care are enjoyed by society at large, then the child care market may not reflect these external benefits. This implies another source of market failure that could be rectified by government intervention into the child care market.

A second component of the market failure argument lies in the potential for the inequitable distribution of child care services. Those families that could most benefit from quality, affordable child care (due to the necessity of two incomes to achieve a living family wage) may simply not have access to such care. While economists tend to focus on the inefficiencies in the child care market rather than the inequities, the latter cannot be ignored in the policy debate.

While most child care experts agree that there is an insufficient supply of quality child care in the United States, there is significant disagreement about what defines quality care. The bulk of this problem is presented quite clearly by David Blau in Chapter 6 of his book entitled The Economics of Child Care (1991). He explains that the quality issue is viewed differently by economists than by child development experts. According to Blau, "Educators stress the process through which children achieve cognitive, emotional, and social development. Economists incorporate this process in their models, but stress the role of parental preferences and substitution in determining the child care choices made by parents" (p. 170). The research presented in this

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such assistance.

[4]I thank Kevin Hollenbeck for his input on this issue.

paper uses an economist's model to examine the relationships between child care costs and labor force participation behavior.

The approach taken in the modelling of child care quality may affect the resulting relationship found between child care quality and the price of care. According to Blau (1991), there is little evidence of a positive relationship between quality as determined from child development and child care expenditures. However, with quality measured in terms of provider characteristics (such as child-staff ratios), "higher priced options are likely to provide higher quality care. Without controlling for quality, the effect of price on choice will be a combination of price effects (expected to be negative) and quality effects (expected to be positive)" (Hofferth and Wissoker, p. 73, 1992). Clearly, then, if empirical methods do not adequately control quality, the estimated impact of price on child care mode choice may be skewed.

Literature Review

With the rapid increases in the labor force participation rates of women during the 1960's and 1980's (and particularly, the rise in LFP rates for mothers of young children), came the desire in the social science research community to understand the nature of child care choices and the relationship between child care issues and employment behavior. The lack of child care data meant that the first step to achieving this goal was in the procurement of usable information regarding child care usage and costs. Several large data procurement efforts were conducted during the 1970's to provide the means with which to fill this gap in the empirical literature. As a result of these efforts, numerous publications appeared in the 1970's and early 1980's in an attempt to provide rigorous evidence regarding the effect of child care costs on the demand for children and labor force behavior. However, as will be seen below, there is no reason to conclude from these studies that the key research issues are resolved.

The first of these surveys was Day Care Survey 1970. This survey was conducted by Westinghouse Learning Corporation and Westat Research, Inc., under contract to the Office of Economic Opportunity. According to Day Care Survey-1970: Summary Report and Basic Analyses (1971), this survey represented the first nationwide child care survey conducted in the United States. It was designed to collect information regarding the various sources of child care services, ranging from casual arrangements with family and friends to formal, full-day care from fully-licensed day care centers. The researchers concluded that there was a substantial, currently unmet, demand for quality day care. Additionally, they found little trustworthy care available for school-aged children before and after school.

The largest of the Negative Income Tax (NIT) experiments, the Seattle Income Maintenance Experiment and the Denver Income Maintenance Experiment, abbreviated as SIME/DIME, was conducted in the early 1970's. Both cities' experiments incorporated a significant child care subsidy component to the NIT program. A very extensive literature stems from these experimental data, the bulk of which can be found in Stanford Research Institute (SRI) research memoranda published from the mid-1970's to the early 1980's. Several of these memos

address the intricate relationships between child care cost and availability and female labor force behavior, but none provide direct evidence of the explicit effects of child care costs on women's labor force participation. Therefore, while some of the memos do make claims against the advisability of using child care subsidies to strengthen mothers' labor force attachment, their conclusions cannot be considered as scientific evidence in the current policy debate.

One of the first major child care research efforts published by an economist is the seminal article by Heckman (1974). He examined the relationship between child care costs and female labor supply, and found a significant negative effect of the cost of care on labor supply. Additionally, he found that the presence of young children significantly reduced mothers' labor supply efforts, even with child care costs controlled.

The next major child care research effort published in a major economics journal was conducted by Robins and Spiegelman (1978) using SIME/DIME data. Although they did not utilize available econometric techniques designed to correct for potential selection biases, their research provided updated information regarding the factors that influence the demand for paid child care by two parent families in which the mother works. They found that the demand for paid child care is responsive to prices and income. A major contribution of their work were their predictions regarding child care usage for different individual characteristics and a variety of child care subsidies.

Blau and Robins (1988) utilize 1980 EOPP data to estimate the impact of child care costs on the mother's employment behavior and use of formal and informal child care modes. They average the individual family's child care expenditures across families within a given geographical area in constructing a child care price measure. They found that higher child care costs are negatively related to the probability that the mother will participate in the labor force.

Several child care research efforts have appeared in the literature in the past five years that rely on two relatively new data sources: the NLS-Youth and the SIPP. Michalopoulos et al (1992) develop and implement a full structural model to estimate child care mode choices and labor force participation choices simultaneously, using SIPP data from the 1984 panel. They focus on both married and single women in their analyses, but do not provide estimates of the effect of child care costs on women's labor force participation status. Connelly (1990) also uses the SIPP in her focus on single women with an explicit joint modelling of AFDC recipiency and employment behavior. Connelly (1992) uses the same data source to focus on married women. Neither paper provides a detailed theoretical model with the same technical detail as Michalopoulos et al (1992), but the empirical techniques are sophisticated and clearly appropriate. Ribar (1990, 1992) implements both structural and reduced form models to estimate the impact of child care costs on employment behavior and the utilization of both paid and unpaid child care. Ribar (1992) provides the basis for the empirical analyses found in this paper.

II. DESCRIPTION OF THE UNDERLYING BEHAVIORAL MODEL

The behavioral model underlying the empirical work in this paper is drawn from the partial reduced form specification developed in detail by Ribar (1992). While a full structural implementation may have broader appeal, the limitations inherent in such a model are too severe for this paper. An example of an excellent derivation of a full structural model can be found in Michalopoulos, et al (1992). A key restriction of that derivation is its requirement that the mother maximize utility over three distinct states: no market work so no paid child care; some market work with all unpaid care; and some market work with all paid care. This is an unfortunate restriction given that it is common for mothers to utilize a combination of paid and unpaid care particularly for school-aged children.

In this paper, mothers are assumed to maximize utility (seen in equation (1)), where utility is expressed as a function of leisure time (L), market goods (G), and child care quality (CQ).[5] The constraints in this maximization problem include a time constraint, a money budget constraint, and a production function for child care services. The mother's total time can be divided between market work time, leisure time, and time devoted to child care. Because it is not possible to distinguish leisure time from home production time (including child care time), total available time (T) can be expressed as the sum of market work time (H) and leisure time (L).

(1) maximize $U = U(G, CQ, L)$

subject to the following constraints.

(2) $T = H + L.$

(3) $G + Pcc*Cp + Scc*Cn = Y + W*H.$

(4) $CQ = fn(Cm, Cp, Cn, X, HH, M).$

The budget constraint faced by the mother is shown in equation (3), where total expenditures equal total income. Potential budget outlays include expenditures on market goods and child care services. Pcc is the (hourly) price of paid child care, Scc is the (hourly) shadow price of nonpaid child care, Y is nonlabor income (calculated as total family income minus earned income and AFDC income), W is the (hourly) market wage, and H is hours of market work. As explained by Ribar (1992), the shadow price of nonpaid care represents the opportunity cost of the free care-provider's time. Without explicitly incorporating some sort of cost of nonpaid care into the budget constraint, the solution to the maximization problem would imply that the demand

[5]A family labor supply model (see, for example, Blau and Robins 1988), would include the leisure time of other adults in the household as arguments in the family utility function. I treat other adult household members' leisure time as exogenous, but plan to address the potential endogeneity of household composition in later research.

for paid child care is always zero. See Ribar (1992) for a description of criticisms to this approach.

Note that (Pcc*Cp + Scc*Cn) represents total cost of work, expressed in hours of paid work-related services. (Here, the only costs of work are child care costs.[6]) Costs of work are not shown as a function of actual work hours because child care usage can exceed work hours due to transportation time, for example. However, the mother's choice of hours of paid child care is directly related to the hours of work decision. Because costs of work appear in the budget constraint with some direct relationship to work effort, any factors affecting costs of work will also affect the mother's work decision.

An important factor in the budget constraint is the means-tested nature of AFDC (and other work-tied transfers). If the mother takes a paid job with a sufficiently high salary (particularly a fulltime job), then she will not be eligible for AFDC coverage. The resulting nonlinearities in the budget constraint create econometric complexities that I do not directly address in this paper. For this paper, I begin the empirical work by addressing the endogeneity of AFDC income tangentially by the labor force participation correction. (Michalopoulos, et al also rely upon this ad hoc correction, although the focal point of their research is not single mothers.) After estimating the LFP probit for single mothers as a single equation, I jointly estimate equations for the discrete AFDC and LF participation decisions.

A child care quality production function is given in equation (4). In this expression, factors affecting child care quality include hours of maternal care (Cm), hours of paid nonmaternal care (Cp), hours of unpaid nonmaternal care (Cn), the mother's personal characteristics (X), her household characteristics (HH), and regional characteristics (M). The regional characteristics include state child care regulations and state wage levels.

The maximization of this utility function subject to the three constraints yields three demand functions (excluding the demand for market goods), representing the demand for leisure, the demand for paid child care services (controlling for quality), and the demand for unpaid child care services. I focus on the first two demand functions in this paper. These two estimating equations are shown below. Ideally, these two equations would be estimated simultaneously, because a consequence of the jointness of the two decisions is a potential correlation across the two equation errors. However, this paper estimates the two equations separately.

(5) $LFP = fn(X, HH, M, W, Pcc, A)$

(6) $Cp = fn(X, HH, M, W, Pcc, A)$

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[6]See Blank (1988) for an example of this cost of work formulation.

In the above, X and HH represent the mother's personal and household characteristics, M represents regional characteristics, A represents factors influencing the mother's demand for leisure time, and W and Pcc represent the potential market wage and potential child care price. One could imagine incorporating a measure of the "net" hourly wage, in which the hourly price paid for child care is subtracted from the full hourly wage measure. I enter W and Pcc as distinct terms for two reasons. First, while information about child care usage is obtained only for labor force participants, the total number of hours worked per week is not constrained to be equal to the number of paid child care hours. Recall that child care can be divided between paid and unpaid care, and it is possible that total weekly paid care hours could exceed total hours worked that week (due to time spent in direct transit to and from work, as well as time spent running errands before and after work). Second, there is no reason to present the LFP responsiveness to wage changes and the LFP responsiveness to price of care changes in a single parameter estimate. Perhaps this assumption would be more reasonable were the two measures true marginal wage and price of care measures, but since they are closer to average measures in these data, one might expect the two elasticities to be quite different. This paper's sensitivity analyses will include a test of this specification.[7]

Because employment behavior (not the continuous labor supply decision) is the focus of this paper, equation (5) is shown with the 0-1 LFP dependent variable. This LFP equation will be estimated via probit. Equation (6) represents the demand equation for paid child care. Here, the dependent variable is the hours of paid care per child. I will estimate this equation including the workers who do not use the paid child care options. This suggests using the tobit model for estimation. Note that there is nothing in this model development that requires the mother to rely exclusively on paid (versus unpaid) child care.

In addition, there are two supporting equations to be estimated. First, a wage equation is estimated to produce a wage measure (purged of measurement error) for all women (regardless of labor force participation status). Second, a child care price equation is estimated in order to produce an instrument for the hourly price of child care for all women, even those women not participating in the labor force, as well as those working women NOT paying for any child care. The results of these two equations are used to calculate predicted values for the wage and the hourly price of care, both regressors in the two primary equations listed earlier.

The empirical work begins with the estimation of the wage and child care price instrumenting equations. Each of these equations suffers from sample selection: the wage is observed only for labor force participants, and child care price is observed only for labor force participants who pay for child care. To correct the LFP sample selection in the wage equation a

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[7]As Ribar (1992) explains, the only theoretical predictions from this model are that an increase in the wage leads to a decline in the probability of labor force participation and an increase in the price of paid care leads to a decline in the use of paid child care.

Heckit-type correction term is included as a regressor. This term is known as the Inverse Mills Ratio, and is calculated from the results of a reduced form labor force participation probit.

The appropriate selection correction for the child care price equation is more complicated because the selection is a result of two (sequential) discrete decisions: first, the 0-1 labor force participation (LFP) choice, then the decision regarding the use of paid child care. The two decisions are considered to be sequential not because one choice is actually made prior to the other choice, but rather, because the child care choice is only observed for LFP=1, therefore the "cell" of LFP=0 with paid care is never observed. Consequently, the two equations cannot be considered a bivariate probit in the strict sense of the term. This selection correction technique produces two terms akin to Heckman's single-termed Inverse Mills Ratio. I refer to these terms as LAMBDA1 and LAMBDA2 in the empirical discussion to follow. A detailed presentation of this selection correction can be found in Tunali (1986), and an application of the procedure in the child care literature can be found in Michalopoulos, et al (1992).

The technique of predicting the price of child care out of sample as described above is not without its critics. Hotz and Kilburn (1991) exploit the availability of child care data for nonworking mothers to test the validity of using data on workers only to explain the demand for child care for nonworking mothers. They find that the demand for child care for preschoolers for working mothers is substantively different from that of ALL households. In addition they find that the child care demand of those nonworking households is more price-sensitive than when the mother works, and that these nonworking households are more likely to be comprised of lower income nonwhites. Their research shows that care must be taken when attempting to predict the hourly price of care out of sample. However, due to the SIPP's unavailability of child care data for nonworking mothers, I will rely on the standard approach. In any event, it is possible that these nonworking mothers utilize a type of child care that they themselves would not utilize were they to work. For example, they may be relying on a child care mode with a high hourly cost if used for a limited number of hours per week, but which would be much less expensive on an hourly basis if used more intensively. Even within the SIPP, there is strong evidence that child care users can exploit economies of scale. (US Dept. of Commerce, "Who's Minding the Kids?" 1992) In addition, because the focus of this paper is employment behavior, it is reasonable to use child care data obtained from working mothers.

After the two instrumenting equations have been estimated, the next step is to estimate equations (5) and (6). The two equations share the same regressor list, including the (predicted) hourly price of child care, the (predicted) hourly market wage, the mother's education, race, age and age-squared, her nonlabor income and the number of children in her family. The age-distribution of her children is not included because its impact is controlled via the predicted price of care.

In summary, the order of estimation is as follows. First, a pure reduced form labor force participation probit equation is estimated in order to construct an Inverse Mills Ratio for use in the Heckit-corrected wage equation. Then, the LFP and pay-for-care equations are estimated via bivariate probit to allow construction of the two bivariate selection terms. The second step in

estimation is to estimate the wage and child care price equations in order to create predicted hourly wages and predicted hourly child care expenditures to be used as regressors in other equations. Then, the two primary equations will be estimated separately to determine the impact of the market wage and price of child care on LFP and child care choices. Finally, the LFP and AFDC probit equations will be estimated jointly to gauge the impact of incorporating their jointness on the single LFP equation's parameter estimates.

III. DATA

The data used in this paper are from the 1987 panel of the Survey of Income and Program Participation (SIPP), a nationally representative longitudinal sample. The SIPP data are the most useful of the various survey data sets for this project for a number of reasons. First, in the SIPP, the surveys are conducted every four months so that recall error is less severe than with annual surveys. Second, the primary purpose of the SIPP is to procure quality income information--there are approximately 50 different income sources detailed in the SIPP. These various sources of income are particularly important if one is to examine the labor force participation behavior of lower-income individuals, a category in which many female household heads fall. Finally, the SIPP collects information regarding child care usage and fees paid, work and fertility history, and education and training.

Description of Revised Child Care Questionnaire

Each SIPP panel contains detailed child care information for working women in special supplements (called topical modules) at the third and sixth interview. (In the SIPP, an interview is referred to as a wave.) Therefore, the child care information is available at two separate time periods, a fact that hopefully will permit the exploitation of panel data estimation methods in later research. The child care topical module includes questions concerning the type and cost of primary and secondary care utilized by the mother for up to three children. Additional questions are asked regarding the reliability of this care.

The SIPP began with the 1984 panel and additional panels have been started each year through 1992. However, wave 6 of the 1987 panel marked the first interview at which a substantially revamped child care questionnaire was implemented. In previous child care modules, the mother was asked questions about the mode of care used for up to three children. However, child care expenditures were measured only in aggregate, so that in families with more than one child in care (or one child in more than one type of care) it is impossible to distinguish paid child care hours from unpaid child care hours. All of the previous child care research using the SIPP has relied on the 1984 Panel. Ribar (1992) includes a description of the complex approximation procedure he implemented to assign hours of care to paid versus nonpaid care. The revised child care questionnaire eliminates this need for approximation.

Additionally, because the revised questionnaire contains these more detailed, probing questions regarding hours and cost of care, the resulting data are considered more trustworthy. (See US Dept. of Commerce, "Who's Minding the Kids?" 1992). A primary contribution of this paper is the exploitation of the improved quality of the key child care variables.

Description of Data Used in Estimation

This paper focusses on the employment and child care utilization behavior of mothers, therefore, the estimating samples include females, ages 18 through 55, who are mothers or guardians of children under the age of 13. It is assumed that by the time children reach the teenaged years, they require very little child care, the bulk of which is provided via school. Additionally, teenagers are frequently child care providers themselves, be it providing free care for siblings or other relatives, or limited hours of paid babysitting.

The SIPP child care data are available for the last week prior to the interview date. Earnings information are available at the month level, and hours worked per week are available for a "typical week" during the entire four-month interview period. Due to these time-period discrepancies, I have chosen to aggregate the child care data up to the month level, to match the labor market information. This is the same aggregation procedure followed by Ribar (1992).

The data for this paper are stratified by marital status into two estimating samples. The married sample includes only those women who are married with a spouse present. All women not reporting that status are considered to be single. There are 2,405 women in the married sample and 716 women in the single sample. Additionally, 629 married women report paying for care, and 177 single mothers report paying for care.[8] Means for the variables used in the empirical analyses are found in Table 1 and the variable definitions are in Figure 1. See that the married women are more educated on average than the single women, and working women who use paid care are more educated than those who do not pay for care. In addition, the percentage of single mothers receiving AFDC support is high (29 percent), with a significant fraction of the working single mothers who pay for care (7 percent) also receiving AFDC support.

Mothers in the married sample have on average nearly 2 children--see that the number of children is lower for the single mothers. In these data, married mothers are more likely to have older children than the single mothers. There are significant racial composition differences in the married and single samples as well. While 11 percent of the married sample is nonwhite, 33 percent of the single sample is nonwhite.

[8]A mother is counted as paying for care if she reports a positive dollar amount paid for care. This continuous variable was relied on due to the (infrequent) discrepancy between the response to the question "Did you pay for this care?" and "How much did you pay for this care?"

The labor force participation rates for the two samples are nearly identical at approximately 59 percent. Additionally, while the married mothers who pay for care have on average higher earnings and higher wages, the single mothers work more hours per week. For working mothers paying for care, usual hours per week is greater than 35, the standard cutoff for fulltime status. Previous data have shown that 70 percent of working single mothers work fulltime (Foley 1992).

Page 3 of Table 1 shows means for the child care data. For married mothers paying for care, the average number of paid hours per month is 28.49; the corresponding figure for single mothers is 27.87. For working mothers paying for care, married mothers pay more per month for care than single mothers ($237 versus $201), but the two groups spend nearly identical fractions of their monthly earnings on child care, approximately 10 percent. However, when total family income is considered (NONLABY + earnings) single mothers pay twice the percentage of their income in child care than do the married mothers. Finally, the key child care price measure (PRCARE1), the average hourly amount paid in child care in terms of the mother's work hours, is consistent with the figures presented in "Who's Minding the Kids?" (US Dept. of Commerce, 1992) Working married mothers pay $1.71 per hour worked, while single mothers pay $1.34 per hour worked. While single mothers tend to have younger children (needing care that is typically more costly than care for older children), they are more likely to rely on relative care, a much cheaper source of care than formal market care.

Tables 2A and 2B show the distribution of modes of care for children of employed women who report using nonmaternal child care. These figures are shown for children of single and married women. In the table, relative care includes care provided by a spouse (if married), an immediate family member, or grandparent. Formal care includes day/group care centers, nursery or preschool, or organized school-based activities (before or after school).

Preschool children of single mothers in paid care are approximately 30 percent more likely to be cared for by a relative than preschool children of married mothers. However, the rates of unpaid relative care for all preteen children do not vary much across the mother's marital status. In addition, preschool children of single mothers in both paid and unpaid care are nearly twice as likely to use school as the primary source of care (although the cell size here is small). On the other hand, preschool children of married mothers are more likely to be in paid formal care than children of single mothers; however, the opposite is true of unpaid formal care.

The primary measure of the hourly price of child care utilized in this paper is named PRCARE1. This variable is constructed by dividing the total amount paid for child care that month for up to three children by the total hours worked that month. This measure is hourly in the same sense that the wage is an hourly wage. This is the measure utilized by Rachel Connelly in her child care research.[9] For the sake of comparability, I conduct sensitivity analyses to

[9]I use three as the upper limit for the number of children because in this wave of the SIPP, this is the maximum number of children for whom the child care information was collected separately. Note that few families have more

determine the sensitivity of the results to this particular construction. In these analyses, I experiment with two additional child care price measures, named PRCARE2 and PRCARE3. These two measures are defined below. PRCARE2 is the price of care per hour worked (as in PRCARE1) per child in paid care, and PRCARE3 is the price of care per hour of paid care per child in paid care. PRCARE3 is the price of care measure utilized by David Ribar (JHR, 1992). Recall, however, that he had to implement some guesswork to sort total care hours into paid versus unpaid hours of care.[10]

Additional data not available in the SIPP were incorporated to provide information at the state level regarding child care regulation.[11] Two variables describing the differences in child care regulations across states are incorporated as regressors in the child care price equation. These variables are included as measures of child care quality in that they describe the degree of child supervision and the quality of providers. MAX3YEAR equals one when the maximum child to staff ratio in center care is less than or equal to 10:1 for three year-olds. FADTRAIN equals one when first aid training is required of care-providers in child care centers.

Note that these two measures focus on regulated center-based care because the percentage of center care that is successfully regulated is considerably greater than that of family day care homes. Many family day care situations which, according to state law SHOULD be regulated, are not actually subject to any sort of state regulation or licensing.

IV. RESULTS

Results from the labor force participation (LFP) probit and wage equation are found in Table 3. The results for both equations are consistent with those usually described in the relevant literature. Increases in age and years of education cause an increase in the probability of LFP and in the wage. Having children ages 0-2 and ages 3-5 decrease the LFP probability for single and married mothers. Finally, increases in the number of children causes both the wage and the probability of LFP to fall. NUMKIDS is included as a regressor in the wage equation as a proxy for intermittent work history.

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than three children under the age of 13, and very few families have more
than three preteen children in some form of paid care. Only 1.7% of working single mothers and 2.3% of working married mothers have more than three children under 13 years old, with only 0.5% and 0.3% (respectively) of these mothers paying for more than three children in care.

[10]Information regarding taxes and subsidies has not been incorporated into the hourly wage and hourly price of care measures. A full-fledged estimation of a kinky-budget constraint model is beyond the scope of this paper, and there is no evidence to date that suggests incorporating the more ad hoc tax-calculation techniques (such as that implemented by Michalopolous, et al (1992)) have a discernible impact on the key results.

[11]Many thanks to Gwen Morgan of Work/Family Directions, Inc. for providing these data and continued consultations.

Results from the LFP and pay-for-care bivariate probit are presented in Tables 4A and 4B. Note that the correlation coefficient (RHO) is not significant in the single sample but is significant for married mothers. This implies that the correlation between labor force participation and paying for care is stronger for married women. As in the single equation LFP probit, years of education and age are positively related to the probability of LFP. While increases in nonlabor income reduce the probability of LFP for married mothers, the coefficient associated with nonlabor income is not significant for the single sample. Recall that husband's earned income is included in the married mother's nonlabor income measure. Having very young children reduces the probability of LFP for both samples. In the sample-selected pay-for-care probit, having another adult in the household who is not working has a statistically significant negative impact on the probability of paying for care. Additionally, having children ages 0-2 and 3-5 increases the probability of paying for care in both samples. Note that having an older child in the household (indicated by KID13_17) reduces the probability of paying for care. Finally, the mothers' years of education and race have no significant impact on the probability of paying for care in either sample, but an increase in nonlabor income does increase the probability of paying for care for married mothers.

Results from the child care price equation estimated with the bivariate selection correction are in Table 5. See that only one of the selection correction terms, LAMBDA1, is statistically significant for single mothers, while neither are significant for married mothers. For married mothers, increases in the number of preschool children, living in a metropolitan area, and living in a state with high average wages tend to increase the price paid for care. For single mothers, living in a state with a maximum 10-to-1 child-staff ratio permitted for three year-olds in center care (marginally significantly) increases the price paid for care. Neither of the two child care quality controls strongly affects the price of care for single or married mothers.

The results for the primary estimating equations are in Tables 6A and 6b. Note that the results in these tables are derivatives. Recall that the primary equations are the LFP probit, and the hours of paid care tobit. These two equations include the predicted hourly wage (PREDWAGE) and the predicted hourly price of child care (PREDPRCR) as regressors, along with YRSEDUC, NONWHITE, NONLABY, AGE, AGE2, KID0_2, KID3_5, and ADCGRANT. The presence of preschool children is included as measures of tastes for leisure.

In the married and single samples, increases in the price of care (statistically significantly) reduce the probability of LFP, while increases in the potential market wage increase the LFP probability. These basic results are consistent with the implications of the underlying behavioral model as well as basic intuition. Mothers will be less likely to seek market work if the costs of taking a job are higher, and they will be more likely to seek work, the greater the difference between the market wage and the opportunity cost of their time.

By calculating participation elasticities, the magnitudes of the impact of changes in these two key variables can be compared across samples. According to Connelly (1991), "the larger the quality component of child care, the less negative we expect the effect of child care costs on

mother's labor market decisions to be." Available evidence suggests that married family's child care expenditures are more responsive to quality factors than care expenditures in families with single mothers. This suggests that the child care price elasticity for single mothers should be greater than that of married mothers--a conclusion supported by my results. The child care price elasticity for employment for single mothers is -0.521, whereas the corresponding cost elasticity for married mothers is -0.309. This cost elasticity for married mothers is smaller but fairly similar to that found by Connelly (1992) and Blau and Robins (1988). Their cost elasticities were -0.49 and -0.38. Ribar's cost elasticity of -0.74 for married women is significantly larger than what other researchers have found. Ribar explains that his higher cost elasticities may be a result of the manner in which he defined his hourly cost measure. In his research, cost of care is defined as child care expenditures per hour of care utilized per child. Blau and Robins, as well as Connelly and the research presented in this paper, rely on the definition of expenditures per child per hour worked, a measure that may mix cost and utilization effects. According to Connelly (1992), this disagreement across papers in the cost elasticity for married mothers is one of the most important unanswered child care research questions.

Using PRCARE2 and PRCARE3 (as defined earlier), I recalculated the child care cost elasticities. These elasticities are shown in Table 7. See that defining hourly cost of care in terms of hours of care rather than hours of work (as in PRCARE1), causes the child care cost elasticity to fall for single mothers but rise for married mothers. And, the care elasticity that uses the definition of the price of care comparable to Ribar's definition causes married mothers' cost elasticity to fall to −0.191. This is considerably lower than the cost elasticity for married mothers resulting from PRCARE1. Recall that Ribar's cost elasticity for married mothers is −0.74. I have been unable to produce his larger cost elasticity by relying on his definition of the price of care. This may be a result of my ability to precisely identify hours of paid versus unpaid care.

In order to provide evidence regarding the likely affects of child care policies that reduce the cost of child care, I have calculated the mean predicted probabilities of labor force participation for single mothers using the actual (predicted) price of care, 50 percent of this care price, then with free care. For single mothers, the mean predicted probability of labor force participation using the actual price of care is 0.576; with half of this care cost subsidized, the mean predicted LFP probability rises to 0.702, and with free care the LFP probability rises to 0.806. For single mothers currently receiving AFDC support, the mean predicted probability of LFP using the actual price of care is 0.121, and with half-cost care, then free care, that mean LFP probability rises to 0.260 and 0.462, respectively. While these simulations are implemented without regard to potential general equilibrium effects, they indicate that single mothers' labor force participation behavior can be expected to respond strongly to subsidized child care.

Connelly (1990) estimates a child care cost elasticity for single mothers while controlling the endogeneity of AFDC participation. Her resulting cost elasticity is quite low and statistically insignificant. When I estimate the LFP probit jointly with an AFDC participation probit, the resulting child care cost elasticity is also small but it is negative and significant at the 10% level. The bivariate probit estimates imply a reduction in the potential effectiveness of providing child

care subsidies to encourage low income single mothers to participate in the labor market. However, this dampening effect may be altered by more clearly modelling the jointness of the LFP and AFDC participation decisions. Specifically, the two choices may be better represented as a switching model, in which the AFDC choice is the observed switching mechanism. In this way, the LFP probit is essentially estimated twice--first conditioned in YESAFDC=1, then conditioned on YESAFDC=0. This sort of modelling improvement should be a key component of any future research in this area.

Just as the child care cost elasticities differ markedly across marital status, there is also a significant difference between the wage elasticities across marital status. Single mothers' labor force participation is much more responsive to changes in the wage as that of married mothers, where the two wage elasticities are 0.953 and 0.577 respectively. The reader can see in Table 7 that the wage elasticity is not substantially affected by altering the price of care measure used in the probit regression.

Also in the LFP probit, see in Table 6A that nonlabor income significantly reduces the married mothers' willingness to participate in the labor force but does not impact single mothers' LFP behavior. However, the maximum AFDC grant available in the mother's state has a small but significantly negative impact on married mother's participation behavior but no impact on married mothers' LFP behavior.

The results for the paid child care hours tobit equations are also shown in Tables 6A and 6B. Increases in the price of care have a strong negative impact on the utilization of paid child care hours, although the impact is stronger for married mothers. Increases in the wage increase paid hours utilization nearly identically for married and single mothers. Finally, having preschool children increases the use of paid care for mothers but reduces the utilization of paid child care for single mothers.

V. CONCLUSIONS AND SUGGESTED FUTURE RESEARCH

Three fundamental conclusions can be drawn from the results presented in this paper. First, the type and intensity of child care modes differs by marital status. Second, the wage and the price of child care have strong effects on the probability of labor force participation. Third, because of this strong relationship between the price of care and LFP, policies that serve to reduce the price of care are likely to have strong impacts on LFP rates.

The research area of child care and employment behavior is a relatively new one for economists, with the bulk of the empirical evidence having appeared in the past five years. There has been little agreement in these research efforts regarding the magnitude of the impact of child care costs on labor force participation, and very little evidence regarding the relationship between child care costs and employment behavior for single mothers. Therefore, it should be obvious that there still exists a need for quality child care research. However, if there is any doubt, one need

only peruse the chapter entitled "Barriers to Employment" in the recent book by Lawrence Mead (The New Politics of Poverty: The Nonworking Poor in America, 1992). Without citing any of the recently published (but circulated for some time) child care research conducted by economists, Mead concludes that child care cost and availability is no barrier to employment for low income women. This conclusion is inconsistent with the current evidence on the subject and serves only to strengthen the current conservative trend in U.S. political thought. Hopefully, my research will contribute to the body of knowledge needed to counter that sort of uninformed, but potentially powerful, policy-oriented publication.

In future research, I plan to consider the potential endogeneity of two key sets of regressors--the presence and number of children ages 0-2, and household composition. Connelly (1992) finds that the presence of children 0-2 is endogenous to LFP and care decisions. It is likely that household composition variables will suffer from greater endogeneity problems for the simple reason that it is easier (quicker) to alter the composition of a household than to "make" a baby. Additionally, as discussed earlier, I plan to modify the modelling and implementation of the joint LFDC and AFDC equations.

References

Bell, Stephen H. and Neelima Grover, "Do Transition Benefits Get Single Parents Off Welfare?" paper prepared for the Western Economic Association Conference (San Francisco, CA, June 1992).

Blank, Rebecca M., "Simultaneously Modeling the Supply of Weeks and Hours of Work Among Female Household Heads," Journal of Labor Economics, Vol. 6 (April, 1988): pp. 2-17.

Blau, David M., "The Quality of Child Care: An Economic Perspective," in David Blau, ed., The Economics of Child Care, (New York: Russell Sage Foundation, 1991), pp. 145-74.

Blau, David M. and Philip K. Robins, "Child-Care Costs and Family Labor Supply," The Review of Economics and Statistics, Volume LXX, No. 3 (August 1988), pp. 374-81.

Cattan, Peter, "Child Care Problems: An Obstacle to Work," Monthly Labor Review, Vol. 114 (October, 1991), pp. 3-9.

Connelly, Rachel, "The Effect of Child Care Costs on the Labor Force Participation and AFDC Recipiency of Single Mothers," Discussion Paper 920-90 (Institute for Research on Poverty, 1990).

Connelly, Rachel, "The Importance of Child Care Costs to Women's Decision Making," in David Blau, ed., The Economics of Child Care, (New York: Russell Sage Foundation, 1991), pp. 87-118.

Connelly, Rachel, "The Effect of Child Care Costs on Married Women's Labor Force Participation," The Review of Economics and Statistics, Volume LXXIV, No. 1, (February 1992), pp. 83-90.

Foley, Jill, "Single Parent Families, Poverty and Health Insurance Coverage: Changes in Family Structure--Policy Implications," Employee Benefits Research Institute, Volume 13 #1, January 1992.

Garfinkel, Irwin, Daniel Meyer and Patrick Wong, "The Potential of Child Care Tax Credits to Reduce Poverty and Welfare Recipiency," Population Research and Policy Review, Vol. 9 (1990), pp. 45-63.

Heckman, James, "Sample Selection Bias as a Specification Error," Econometrica, Vol. 47, #1 (January 1979), pp. 422-88.

Heckman, James J., "Effects of Child Care Programs on Women's Work Effort," Journal of Political Economy, Vol. 82 (supplement, 1974), pp. 136-63.

Hofferth, Sandra L. and Douglas A. Wissoker, "Price, Quality, and Income in Child Care Choice," The Journal of Human Resources, Vol. 27, No. 1 (Winter 1992), pp. 70-111.

Hotz, V. Joseph and M. Rebecca Kilburn, "The Demand for Child Care and Child Care Costs: Should We Ignore Families with Non-Working Mothers?" Working Paper Series 92-1, (The Harris School, The University of Chicago, December 1991).

Kisker, Ellen and Rebecca Maynard, "Quality, Cost, and Parental Choice of Child Care," in David Blau, ed., The Economics of Child Care, 1991 (New York: Russell Sage Foundation), pp. 127-144.

Mead, Lawrence M., The New Politics of Poverty: The Nonworking Poor in America (New York: Harper Collins Publishers, Inc., 1992).

Michalopoulos, Charles, Philip K. Robins, and Irwin Garfinkel, "A Structural Model of Labor Supply and Child Care Demand," Journal of Human Resources, Volume XXVII, No. 1 (1992), pp. 166-203.

Phillips, Deborah A. (ed.), Quality in Child Care: What Does Research Tell Us? Research Monographs of the National Association For the Education of Young Children, Volume 1, (Washington, DC: NAEYC, 1987).

Presser, Harriet B. and Wendy Baldwin, "Child Care as a Constraint on Employment: Prevalence, Correlates, and Bearing on the Work and Fertility Nexus," American Journal of Sociology, Volume 85, No. 5, pp. 1202-13.

Ribar, David, "Child Care and the Labor Supply of Married Women: Reduced Form Evidence," The Journal of Human Resources, Volume XXVII, No. 1 (1992), pp. 134-65.

Ribar, David. "A Structural Model of Child Care and the Labor Supply of Married Women," Pennsylvania State University working paper, August 1991.

Robins, Philip K., "Child Care and Convenience: The Effects of Labor Market Entry Costs on Economic Self-Sufficiency among Public Housing Residents," Social Science Quarterly, Vol. 69, No. 1 (March 1988), pp. 122-36.

Robins, Philip K. and Robert G. Spiegelman, "An Econometric Model of the Demand for Child Care," Economic Inquiry, Volume XVI, No. 1 (January 1978), pp. 83-94.

Sonenstein, Freya, Leighton Ku, E. Kathleen Adams, and Tracey Orloff, "Final Report: Potential Research Strategies for Evaluating the Effects of Transitional Medicaid and Child Care Benefits," Delivery Order 4 (SysteMetrics/McGraw-Hill, under contract No. HHS-100-88-0041, May 17, 1990).

Tunali, Insan, "A General Structure for Models of Double-Selection and An Application to a Joint Migration/Earnings Process With Remigration," Research in Labor Economics, Volume 8, Part B (1986), pp. 235-82.

U.S. Department of Commerce, Bureau of the Census, "Who's Minding the Kids: Child Care Arrangements," Current Population Reports, Household Economic Studies, Series P-70, No. 9 (Winter 1984-85).

U.S. Department of Commerce, Bureau of the Census, "Who's Minding the Kids: Child Care Arrangements," Current Population Reports, Household Economic Studies, Series P-70, No. 20 (Winter, 1986-87).

U.S. Department of Commerce, Bureau of the Census "Who's Minding the Kids: Child Care Arrangements," Current Population Reports, Household Economics Studies, Series P-70, (Summer 1992).

U.S. General Accounting Office, Job Training Partnership Act: Actions Needed to Improve Participant Support Services. Report to Congressional Requesters, (Washington, DC: General Accounting Office, June 1992).

Waite, Linda J., Arleen Leibowitz, and Christina Witsberger, "What Parents Pay For: Child Care Characteristics, Quality, and Costs," Journal of Social Issues, Volume 47, No. 2 (1991), pp. 33-48.

Walker, James R., "Public Policy and the Supply of Child Care Services," in David Blau, ed., The Economics of Child Care, (New York: Russell Sage Foundation, 1991), pp. 51-78.

Table 1
Key Variable Means
(standard deviations in parentheses)

Demographic Information	Full Sample	Married	Single	Married & Pay	Single & Pay
Number of observations	3,121	2,405	716	629	177
YRSEDUC	12.31 (2.15)	12.53 (2.12)	11.60 (2.10)	13.15 (2.06)	12.10 (1.95)
NONLABY	2188.91 (2187)	2632.55 (2203)	689.77 (1289)	2406.02 (1547)	624.50 (1289)
YESAFDC	0.07 (0.26)	0.011 (0.10)	0.29 (0.45)	0 (0)	0.07 (0.25)
OTHADULT	1.28 (0.91)	1.36 (0.80)	1.00 (1.19)	1.13 (0.47)	0.80 (1.22)
AVGOTHED	11.05 (4.30)	12.54 (2.26)	6.04 (5.57)	13.03 (2.24)	4.68 (5.68)
AVGOTHHR	33.54 (19.83)	40.19 (15.29)	11.22 (16.78)	43.73 (12.12)	11.57 (17.23)
UNADLT18	0.13 (0.34)	0.096 (0.29)	0.25 (0.43)	0.03 (0.18)	0.14 (0.34)
MARRY	0.77 (0.42)	1.00 (0)	0 (0)	1.00 (0)	0 (0)
NUMKIDS	1.97 (0.97)	2.02 (0.96)	1.81 (0.99)	1.82 (0.84)	1.63 (0.88)
INFANTS	0.29 (0.49)	0.31 (0.50)	0.24 (0.46)	0.38 (0.52)	0.30 (0.47)
YNGKIDS	0.45 (0.60)	0.46 (0.60)	0.40 (0.59)	0.65 (0.63)	0.51 (0.63)
MIDKIDS	0.94 (0.83)	0.94 (0.83)	0.92 (0.83)	0.66 (0.80)	0.71 (0.75)
OLDKIDS	0.30 (0.60)	0.31 (0.61)	0.25 (0.55)	0.13 (0.40)	0.11 (0.40)
METRO	0.71 (0.45)	0.70 (0.46)	0.75 (0.43)	0.71 (0.46)	0.78 (0.41)

Table 1
(Continued)

Demographic Information	Full Sample	Married	Single	Married & Pay	Single & Pay
SOUTH	0.32 (0.47)	0.32 (0.47)	0.33 (0.47)	0.35 (0.48)	0.32 (0.47)
AGE	33.07 (6.87)	33.51 (6.50)	31.62 (7.70)	31.83 (5.46)	30.14 (6.25)
NONWHITE	0.16 (0.37)	0.11 (0.31)	0.33 (0.47)	0.10 (0.30)	0.24 (0.43)
LFP	0.59 (0.49)	0.59 (0.49)	0.58 (0.49)	-	-
KIDS 0_2	0.27 (0.45)	0.29 (0.45)	0.23 (0.42)	0.36 (0.48)	0.30 (0.46)
KIDS 3_5	0.39 (0.49)	0.40 (0.49)	0.35 (0.48)	0.57 (0.50)	0.43 (0.50)
KIDS 6_12	0.67 (0.47)	0.67 (0.47)	0.66 (0.47)	0.49 (0.50)	0.55 (0.50)
KIDS 13_17	0.24 (0.42)	0.25 (0.43)	0.20 (0.40)	0.10 (0.31)	0.09 (0.29)
Labor Force Information					
EARNINGS (month)	717.49 (939.03)	716.26 (935.39)	721.64 (951.82)	1475.20 (1002.82)	1311.67 (873.00)
WAGE	4.94 (5.89)	5.07 (6.05)	4.51 (5.27)	9.67 (5.73)	8.05 (4.27)
HOURS (weekly hours worked)	20.39 (19.08)	20.07 (18.82)	21.46 (19.89)	36.30 (10.41)	38.30 (8.85)
MHOURS (monthly hours worked)	86.43 (81.80)	85.15 (80.77)	90.60 (85.07)	153.83 (47.40)	162.73 (40.18)

Table 1
(Continued)

Demographic Information	Full Sample	Married	Single	Married & Pay	Single & Pay
Child Care Information (week info)					
ANYPDCAR (0-1)	0.26 (0.44)	0.26 (0.44)	0.25 (0.43)	1.00 (0)	1.00 (0)
TOTKDPAY	0.29 (0.52)	0.30 (0.54)	0.25 (0.45)	1.15 (0.37)	1.03 (0.17)
TOTPDHRS	7.32 (15.39)	7.45 (15.57)	6.89 (14.77)	28.49 (18.13)	27.87 (17.27)
TOTPAY	13.97 (29.81)	14.65 (31.19)	11.67 (24.51)	56.02 (37.44)	47.17 (27.50)
Child Care Information (monthly info)					
HRPCMNTH	31.00 (65.51)	31.52 (66.29)	29.24 (62.84)	120.55 (77.94)	118.29 (73.82)
HRNPMNTH	88.16 (128.33)	89.80 (128.54)	82.66 (127.59)	112.12 (125.05)	116.12 (139.94)
TPAYMNTH	59.07 (126.56)	61.88 (132.04)	49.64 (105.64)	236.59 (159.18)	200.82 (121.68)
MAX3YEAR	0.32 (0.46)	0.31 (0.46)	0.34 (0.47)	0.31 (0.46)	0.31 (0.46)
FADTRAIN	0.42 (0.49)	0.42 (0.49)	0.41 (0.49)	0.44 (0.50)	0.45 (0.50)
Child Care Price Information					
PRCARE1	0.42 (1.02)	0.45 (1.08)	0.33 (0.77)	1.71 (1.53)	1.34 (1.04)
PRCARE2	0.38 (0.89)	0.39 (0.93)	0.32 (0.75)	1.50 (1.28)	1.31 (1.01)
PRCARE3	0.83 (2.38)	0.87 (2.45)	0.71 (2.15)	3.31 (3.85)	2.88 (3.53)

Table 2A
Primary Care Arrangements for Children of Single Mothers

	Paid Care		Unpaid Care		
	Age ≤ 5	Age 6-12	Age ≤ 5	Age 6-12	Total
# Children	117	65	81	299	562
Relative Care	25 (21.4%)	2 (3.1%)	43 (53.1%)	50 (16.7%)	120 (21.4%)
Non-Relative Care	46 (39.3%)	9 (13.8%)	15 (18.5%)	15 (5.0%)	85 (15.1%)
Formal Care	40 (34.2%)	8 (12.3%)	8 (9.9%)	3 (1.0%)	59 (10.5%)
School Care	6 (5.1%)	46 (70.8%)	12 (14.8%)	221 (73.9%)	285 (50.7%)

Table 2B

Primary Care Arrangements for Children of Married Mothers

	Paid Care		Unpaid Care		
	Age ≤ 5	Age 6-12	Age ≤ 5	Age 6-12	Total
# Children	544	168	412	1,164	2,288
Relative Care	86 (15.8%)	6 (3.6%)	226 (54.8%)	186 (16.0%)	504 (22.0%)
Non-Relative Care	222 (40.8%)	17 (10.1%)	52 (12.6%)	22 (1.9%)	313 (13.7%)
Formal Care	220 (40.4%)	22 (13.1%)	26 (6.3%)	22 (1.9%)	290 (12.7%)
School Care	15 (2.8%)	121 (72.0%)	33 (8.0%)	889 (76.4%)	1,058 (46.2%)

Table 3
Labor Force Participation Probit and Wage Coefficient Estimates
(estimated as two-step Heckit; *t*-statistics in parentheses)

	Married		**Single**	
Variables	LFP Probit	Wage Equation	LFP Probit	Wage Equation
INTERCEPT	-2.557** (-4.17)	-2.313** (-5.28)	-3.964** (-4.35)	-1.881* (-2.22)
YRSEDUC	0.127** (6.35)	0.110** (12.69)	0.150** (5.56)	0.105** (5.23)
NONWHITE	0.064 (0.71)	-0.016 (-0.34)	-0.313** (-2.82)	-0.166** (-2.80)
NONLABY (in thousands)	-0.080** (-8.00)	--	0.017 (0.33)	--
AGE	0.126** (4.20)	0.146** (6.44)	0.187** (3.60)	0.135** (3.77)
AGE2	-0.002** (-4.00)	-0.002** (-5.88)	-0.002** (-3.57)	-0.002** (-3.48)
KIDS0_2	-0.451** (-6.44)	--	-0.339* (-2.42)	--
KIDS3_5	-0.237** (-3.95)	--	-0.192 (-1.64)	--
NUMKIDS	-0.052 (-1.73)	-0.073** (-4.00)	-0.167** (-2.88)	-0.063 (-1.78)
OTHADULT	0.045 (1.12)	--	0.050 (0.71)	--
AVGOTHED	-0.023 (-1.15)	--	0.001 (0.08)	--
MAX3YEAR	0.128* (2.13)	--	-0.018 (-0.15)	--
FADTRAIN	0.060 (1.00)	--	0.158 (1.49)	--
ADCGRANT	0.00003 (0.15)	--	-0.001* (2.50)	--
METRO	-0.055 (-0.92)	0.238** (7.32)	-0.018 (-0.15)	0.074 (1.40)
SOUTH	0.004 (0.05)	-0.024 (-0.74)	0.003 (0.02)	-0.036 (-0.67)
UNEMPL	--	-0.022* (-2.27)	--	-0.008 (-0.55)
MILLS	--	0.434** (4.49)	--	0.382* (1.97)
R-SQUARED	--	0.2204	--	0.2029
LOG-LIKELIHOOD	-1527.3	--	-420.6	--

* Significant at 0.05 level of confidence; ** Significant at 0.01 level of confidence.

Table 4A
Bivariate Probit Coefficient Estimates for Married Mothers
(*t*-statistic in parentheses)

Variables	**LFP**	**Variables**	**Pay for Care**
INTERCEPT	-2.894** (-5.25)	INTERCEPT	-0.172 (-0.52)
YRSEDUC	0.120** (7.83)	YRSEDUC	-0.020 (-0.89)
NONWHITE	0.060 (0.71)	NONWHITE	-0.006 (-0.06)
NONLABY (in thousands)	-0.079** (9.06)	NONLABY (in thousands)	0.036* (2.0)
AGE	0.149** (4.66)	OTHADULT	-0.040 (-0.72)
AGE2	0.002** (-5.0)	UNADLT18	-0.428** (-3.07)
KIDS0_2	-0.436** (-6.71)	AVGOTHED	0.029 (1.59)
KIDS3_5	-0.222** (-3.77)	KIDS0_2	0.841** (11.57)
NUMKIDS	-0.091** (-3.17)	KIDS3_5	0.815** (10.24)
OTHADULT	0.067 (1.73)	KIDS13_17	-0.340** (-3.76)
AVGOTHED	-0.026 (-1.83)		
MAX3YEAR	0.058 (1.04)		
FADTRAIN	0.040 (0.78)		
ADCGRANT	0.0003 (1.27)		
METRO	-0.043 (-0.79)		
SOUTH	0.106 (1.43)		
RHO	-0.875** (-9.89)		
LOG-LIKELIHOOD	-2291.3		

* Significant at the 0.05 level of confidence; ** Significant at the 0.01 level of confidence.

Table 4B
Bivariate Probit Coefficient Estimates for Single Mothers
(*t*-statistic in parentheses)

Variables	**LFP**	**Variables**	**Pay for Care**
INTERCEPT	-3.9237** (-4.25)	INTERCEPT	-0.57461 (-0.64)
YRSEDUC	0.15046** (6.26)	YRSEDUC	0.030591 (0.52)
NONWHITE	-0.31360** (-2.80)	NONWHITE	-0.33570 (-1.712)
NONLABY (in thousands)	-0.01652 (-0.33)	NONLABY (in thousands)	-0.092614 (-1.34)
AGE	0.18469** (3.53)	OTHADULT	0.19078 (1.693)
AGE2	-0.002498** (-3.33)	UNADLT18	-0.71546** (-3.05)
KIDS0_2	-0.33918* (-2.40)	AVGOTHED	-0.058287** (-3.18)
KIDS3_5	-0.19177 (-1.67)	KIDS0_2	1.6608** (4.65)
NUMKIDS	-0.16683** (-2.74)	KIDS3_5	1.0625** (4.98)
OTHADULT	0.049767 (0.71)	KIDS13_17	-0.52684* (-2.49)
AVGOTHED	0.001044 (0.08)		
MAX3YEAR	-0.092635 (-0.80)		
FADTRAIN	0.15962 (1.46)		
ADCGRANT	-0.000811 (-1.65)		
METRO	-0.022192 (-0.19)		
SOUTH	0.000927 (0.01)		
RHO	0.067397 (0.12)		
LOG-LIKELIHOOD	-629.12		

* Significant at the 0.05 level of confidence; ** Significant at the 0.01 level of confidence.

Table 5
Child Care Expenditures with Bivariate Selection Correction
(*t*-statistic in parentheses)

Variables	**Married & Pay**	**Single & Pay**
INTERCEPT	-0.723 (-1.14)	0.784 (0.88)
NONWHITE	-0.280 (-1.49)	-0.328* (-1.67)
INFANTS	0.652*** (3.63)	-0.047 (-0.18)
YNGKIDS	0.722*** (4.95)	0.198 (1.21)
MIDKIDS	0.059 (0.72)	0.140 (1.18)
METRO	0.492*** (3.74)	0.138 (0.74)
AVGWAGE	0.138** (2.24)	0.073 (0.84)
MAX3YEAR	-0.006 (-0.04)	0.305 (1.62)
FADTRAIN	0.034 (0.30)	-0.147 (-0.93)
LAMBDA1	-0.243 (-1.02)	-0.522* (-1.819)
LAMBDA2	0.160 (0.89)	-0.109 (-0.62)
R-SQUARED	0.1506	0.1338

* Significant at 0.10 level of confidence; ** Significant at 0.05 level of confidence; *** Significant at 0.01 level of confidence.

Table 6A
LFP and Paid Child Care Hours Equations--Derivatives
Married Mothers
(*t*-statistic in parentheses)

Coefficients	**LFP Probit**	**Paid Hours Tobit**
INTERCEPT	-0.067 (-0.31)	-0.797 (-0.04)
PREDPRCR	-0.816** (-3.82)	-11.260** (-4.77)
PREDWAGE	2.67** (9.08)	38.015** (11.84)
NONWHITE	-0.001 (-0.03)	-3.088 (-1.18)
NONLABY (in thousands)	0.030** (7.10)	-0.002** (-4.5)
AGE	0.00003 (0.003)	-2.830* (-2.4)
AGE2	-0.0001 (-0.4)	0.020 (1.12)
KID0_2	-0.100** (-3.32)	13.556** (5.82)
KID3_5	-0.00002 (-0.01)	22.058** (9.3)
ADCGRANT	0.00004 (0.9)	0.002 (0.35)
LOG-LIKELIHOOD	-1530.4	-4597.9
PDF @ MEANS (OR CDF)	0.375	0.236

* Significant at the 0.05 level of confidence; ** Significant at the 0.01 level of confidence.

Table 6B
LFP and Paid Child Care Hours Equations--Derivatives
Single Mothers
(*t*-statistic in parentheses)

Coefficients	**LFP Probit**	**Paid Hours Tobit**
INTERCEPT	-0.094 (-0.28)	-71.281* (-2.03)
PREDPRCR	-0.170 (-1.87)	-14.689 (-1.81)
PREDWAGE	0.551** (6.69)	36.784** (4.71)
NONWHITE	-0.080 (-1.54)	-9.129* (-2.0)
NONLABY (in thousands)	0.007 (0.45)	-1.388 (-1.0)
AGE	-0.008 (-0.36)	1.799 (0.78)
AGE2	0.0001 (0.25)	-0.045 (-1.30)
KID0_2	-0.162 (-0.425)	17.031** (3.78)
KID3_5	-0.059 (-1.32)	15.904** (4.0)
ADCGRANT	-0.004** (-2.67)	-0.002 (-0.16)
LOG-LIKELIHOOD	-421.3	-1323.1

* Significant at the 0.05 level of confidence; ** Significant at the 0.01 level of confidence.

Table 7
Wage and Child Care Price LFP Elasticities

		Single	Married
1.	PRCARE1		
a.	wage	0.953	0.577
b.	price of care	-0.521	-0.309
2.	PRCARE2		
a.	wage	0.979	0.602
b.	price of care	-0.388	-0.401
3.	PRCARE3		
a.	wage	0.925	0.505
b.	price of care	-0.242*	-0.191

* Coefficient not statistically significant.