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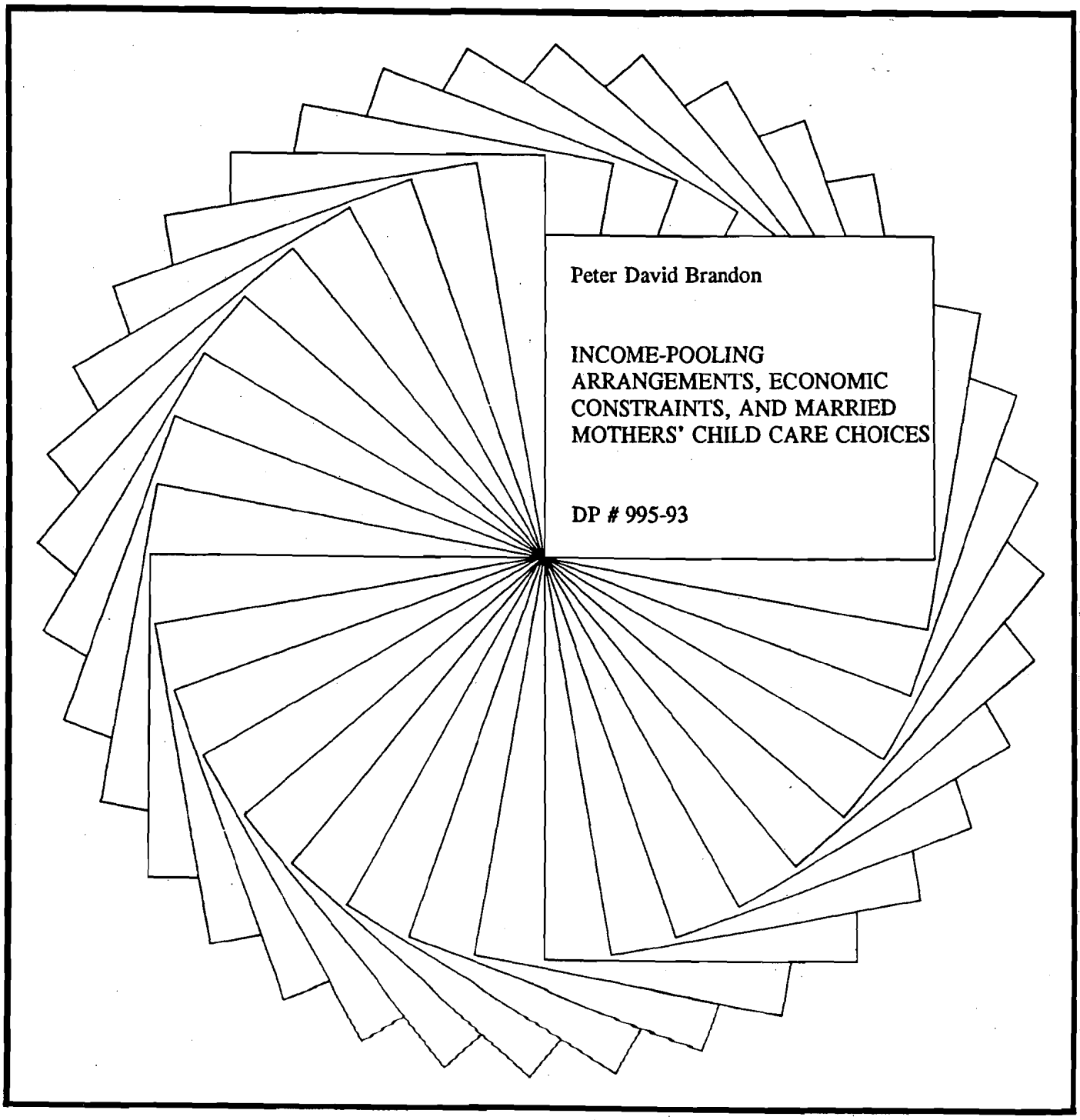

Peter David Brandon

INCOME-POOLING ARRANGEMENTS, ECONOMIC CONSTRAINTS, AND MARRIED MOTHERS' CHILD CARE CHOICES

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Peter D. Brandon
Institute for Research on Poverty
University of Wisconsin-Madison

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Abstract

This paper investigates whether financial agreements between husbands and wives, the cost of child care and the price of a mother's time, and sources of income affect a mother's decision to use child care. This study finds that for working mothers, the price of child care is what matters, not their price of time; for nonemployed mothers, the reverse is true. However, similar patterns for income effects are found for all mothers. Husbands' incomes do not affect mothers' child care choices, but mothers' own abilities to pay and sources of unearned income do affect their child care choices. The only detected effect of spouses' incomes on wives' child care choices occurs when husbands pool their incomes with their wives' incomes. Hence, although child care is a collective consumption good, not all wives in two-parent families have access to husbands' incomes with which to pay for child care.

Income-Pooling Arrangements, Economic Constraints, and Married Mothers' Child Care Choices

Although researchers better understand now how married mothers choose among child care alternatives, they still are not sure how economic constraints affect the child care choices of married mothers. Economic theory predicts that the price of child care and the price of mothers' time should affect the demand for market child care. Yet many studies fail to confirm this theory with respect to married mothers (see Heckman [1974]; Duncan and Hill [1974]; and Blau and Robins [1988]).

Besides disagreements over price effects, debate continues over the effects of income. The income source or sources that generate significant income effects are still obscure. Indeed, there is still no evidence to suggest whether a mother's earnings are the binding constraint on her demand for market child care, or whether her husband's earnings or her household's unearned income is just as binding. In addition, no studies have acknowledged that the allocation of household income may affect a mother's demand for child care.

This study, therefore, has three aims: to show that conflicting findings on price effects are related to the inabilities of past studies to capture local variation in child care price; to show that disagreements over the effects of family income may stem from rival definitions of family income; and, to show that the allocation of income within a two-parent family affects a mother's use of child care. These goals are met by incorporating into a model of child care demand new information about the way in which two-parent families allocate their income; the nonemployment activities of married mothers; and local characteristics that might affect the supply of market child care.

Section I reviews studies of child care demand. The review underscores the need for better specified models and the importance of modeling intrafamily income allocations. Section II presents the model. Section III describes the data and methods. Section IV reports and interprets the results, and section V makes some conclusions.

I. BACKGROUND

Previous Findings on the Effects of Child Care Prices

Some researchers have found that the price of market child care affects a married mother's decision to use it; others have not. The lack of a consistent finding stems from the inability of researchers to accurately measure the price of child care that a mother faces in a given locale. Many data sources have only broad-based measures aggregated over many locales, forcing researchers to assume that the aggregate measures are accurate for particular regions. Others have no measures of child care prices whatsoever, forcing researchers who use these sources to improvise. Heckman (1974), for instance, used proxies for the presence of potential low-cost care givers to estimate the price of child care where the price of formal market care was normalized to one. He found that prices have an impact on the demand for market child care. Robins and Spiegelman (1978) constrained their measure of the price of market care to equal one if a family was eligible for a child care tax subsidy or zero of the family was ineligible for the subsidy. They found no price effects. Berger and Black (1990) and Henriques and Vaillancourt (1988) also defined the price of market care on the basis of the child care subsidy rate available to low-income mothers. These researchers found that mothers' child care decisions were sensitive to changes in child care price subsidies.

Blau and Robins (1988), Cleveland (1990), and Ribar (1989) used data on mothers' reported child care expenditures to construct their own measures of the price of market child care, and each found significant price effects.[1] Blau and Robins calculated a "site-average" weekly price of market care that was assumed to represent an average-quality price that families would face within the given site.[2] Exploiting these measures of child care price, they established that child care prices do affect mothers' demand for market child care. They also observed that substitution across modes occurred when the price of child care increased.[3]

Duncan and Hill (1974) are among the researchers who found no evidence that child care prices affected child care choice. In fact, they argued that child care arrangements are dominated by household geographic features, not economic constraints.

Stolzenberg and Waite (1984) also argued that regional factors affect child care use patterns. They found tepid evidence suggesting that child care prices determined child care use. When they used the wages of child care workers within counties to represent the local price of market child care, no conclusive grounds were established to favor child care price effects. Instead, these two researchers concluded that the availability of local child care resources was probably more critical to working mothers' child care decisions than were prices.

Although results from these studies appear to conflict, several common themes on price effects emerge. Reliable measures of the cost of child care in different parts of the country are important. In studies that do not take into account the price of child care, geographic variables, such as average wages of child care workers, are significant. These studies emphasize that the availability and price of child care in a given region of the country play a role. Moreover, the interaction among regional characteristics of child care markets and children's ages is a major determinant of child care use.[4] Also, when regional factors are controlled, greater substitution among alternative child care modes occurs as the prices of these alternative modes of care are observed to vary.

Previous Findings on the Effects of Income

Just as findings concerning the price of child care are mixed, so are findings regarding the effects of income. Some researchers have found that income affects a mother's decision to use market care; others have not. The lack of a consistent finding stems from the inability of researchers to consistently and accurately define family income. Many data sources have measures of total household income only and lack information on the constituent parts of that income, such as the earnings of wives. This has forced researchers to assume that the demand for child care depends only

on total household income (not to mention prices), when in fact the demand may be much more sensitive to the component parts of that income and whether the parent who makes child care arrangements has access to those parts. Assume for a moment that it is the mother who arranges and pays for child care; in this case, it could be that only her own earnings matter--and not total household income--if her husband does not pool his income with hers to purchase collective consumption goods such as child care.

Duncan and Hill (1974), Yeager (1978), and Cleveland (1990) used data that had a measure of family income but that did not specify the components of that income. They reported insignificant family income effects. Henriques and Vaillancourt (1988) also used an aggregate measure of family income and found that higher-income families were more likely to use day care centers than were lower-income families. Indeed, Henriques and Vaillancourt are the only researchers who have found income effects using an aggregate measure of family income.

Robins and Spiegelman (1978) and Duncan and Hill (1977) used data that at least allowed them to measure maternal nonwage income (i.e., husbands' income plus household unearned income), which they defined as family income. Both sets of scholars found that family income, as they defined it, did not significantly affect the child care use of married mothers. Ironically, Heckman (1974), Ribar (1989), and Connelly (1989), using this same definition of family income, found that increases in maternal nonwage income led to increases in the demand for market child care.

These five studies that identified the nonwage income of mothers were improvements over the studies by Duncan and Hill (1974), Yeager, and Cleveland, which left sources of family income unidentified. Still, the five analyses could not determine the relative importance of husbands' income and household unearned income. Thus, the researchers who conducted these studies were forced to assume that (1) only the level of aggregate maternal nonwage income mattered to the child care choices of married mothers and (2) the effects of husbands' earnings and household unearned income

would be the same. My study questions these assumptions, especially given the debate over the role that fathers play in arranging child care. In it, estimated income effects differ depending upon whether the earnings of husbands are included in or excluded from models of married mothers' child care decisions.

A few studies possessed richer data that allowed them to test the independent effects of husbands' earnings and household unearned income. One of these, Blau and Robins (1988), showed that the child care choices of married mothers are unaffected by changes in household unearned income. Blau and Robins, as well as Leibowitz, Waite, and Witsberger (1988), also found little indication that husbands' incomes directly affect wives' child care decisions. The only studies confirming that the incomes of husbands influence the child care choices of wives are Lehrer and Kawasaki's (1985) and Gustafsson and Stafford's (1988).

The level of a husband's income is expected to affect the choices made by his wife concerning child care because it is assumed that a wife can draw upon her husband's income to pay for child care. But researchers have documented that in two-parent families, mothers organize child care and then pay for it with their own earnings.[5] Besides, studies on the allocation of incomes within households indicate that husbands and wives do not necessarily always combine their incomes (Lazear and Michael, 1988). In fact, financial arrangements from one household to the next differ. Past studies have not recognized that husbands' incomes may affect wives' child care choices only if husbands have agreed to combine incomes. Wives' child care choices may differ if family budgeting schemes allow them access to additional resources, such as spouses' earnings.

Overall, when husbands' income levels were found not to influence mothers' child care choices, the postulate that underlying differences in families' financial arrangements may have confounded the effects of husbands' incomes on mothers' child care choices was not considered. No analyses modeled how differences in a husband's propensity to combine his income with his wife's

earnings could change the amount of income available to pay for collective consumption goods such as child care. This study does, however, investigate whether families' financial arrangements cause the effects of husbands' incomes on wives' child care choices to be indirect--shared incomes increase the level of collective consumption goods that families can buy.

Conflicting results should be expected, given differences in data sources, methods, price measures, and income definitions. Nevertheless, the questions over the roles that economic constraints and husbands play in mothers' child care decisions persist.

II. THEORY

The economic model draws upon Becker's (1965) and Gronau's (1977) insights into the allocation of time between market and nonmarket activities. Gronau's (1977) model is especially apt because it shows how changes in a woman's wage rate and in her nonwage income affect her allocation of time among leisure, home production, and work.

This study adapts Gronau's model for the analysis of child care choice. The model here suggests that the time a mother spends out of the labor market can be allocated to leisure, producing home goods, and producing child quality, and that prices and income affect the time devoted to each activity. To make my model tractable, though, I made it reflect perfect substitutability between market goods and home-produced goods, just as Gronau did.

My model generates predictions about income and price effects. It predicts that an increase in the price of market child care should decrease the demand for market child care.[6] Or, given that child care arrangements are in discrete categories,[7] an increase in the price of child care will negatively affect the odds of choosing market care. Also, as a mother's shadow price of time increases, she will devote more time to the labor market. Hence, the odds that market child care will be used should increase with her shadow price of time.

Like Gronau's model, my model also implies that as nonwage income increases, time in leisure can be substituted for time in either market work or home production. Hence, the model predicts that variations in the opportunity set that are due to changes in nonwage income could also affect child care choices.

As Brandon (1991) shows, when nonwage income is increased, the possibility frontier expands outward. The welfare of all mothers increases, regardless of how they spend their time. When increases in nonwage income relax the constraints facing all mothers, the following behavioral responses in time allocation occur. Due to the pure income effect, mothers with preferences for goods-intensive consumption technology can substitute leisure for time in the labor market, yet maintain the same amount of time for home production. If a nonworking mother has a high preference for leisure, the increase in income will cause her to consume more leisure and work less in the home.

What Brandon's (1991) model suggests is that with no wage rate changes, the pure income effect leads both nonemployed and working mothers to reallocate their time between leisure and home work. If additional leisure time is time taken away from producing child quality, then the possibility exists for both types of mothers to demand extra hours of nonmaternal child care services.

The model's predictions about the effects of nonwage income are based on the simplifying assumption that a husband's income is <u>available</u> to his wife and that his income is an <u>accessible</u> component of his wife's nonwage income. (Most models of female labor supply and the demand for market child care make this assumption as well; see Killingsworth [1983] and Ribar [1989]). But if financial arrangements between a husband and wife differ from one couple to the next, then the nonwage income of some mothers may consist of only unearned assets; hence, some family financial agreements may make a husband's income unavailable to his wife. If a married couple does not pool its income, then the sources of nonwage income for the wife in that couple contract.

Although the model cannot identify which part of nonwage income affects mothers' time allocation and therefore their child care use, the data can help adjudicate which elements of nonwage income affect mothers' child care use. Because income-pooling couples are identified, and sources of nonwage income are distinguished, analyses test separate and combined effects of different sources of nonwage income on mothers' child care choices. The data therefore reveal which parts of nonwage income appear to confirm the economic model's propositions.

An economic model, however, cannot explain completely why one mother uses child care while another does not. For example the economic model's predictions cannot account for an important fact: not all families face the same prices for market child care arrangements. In fact, families face different prices, and demand different types of child care as their children develop, and as they have more children to care for (see Dawson and Cain [1990]). In addition, age gaps among siblings will change a mother's demand for market child care. As school-aged children are a potential source of informal child care, a mother is less likely to seek child care settings for her preschool children when her school-aged children can act as substitute care givers (Walker, 1991).

Besides children's characteristics and numbers, kin networks may also cause the price of market child care to vary. For example, relatives nearby may affect the price of market care. Or coresident kin may lower the price of market care and may therefore increase the likelihood that the mother will choose market care.

Apart from familial characteristics, several maternal attributes are hypothesized to affect child care choice. If mothers spend more hours working, are better educated, live in the South, or are black, then they should be less likely to use parental care (see Leibowitz, Waite, and Witsberger [1988]).

III. DATA AND METHODS

The analyses use data from the National Longitudinal Study of the High School Class of 1972 (NLS'72). The NLS'72 is a national probability sample of over 22,000 persons who were high school seniors in 1972. The survey has followed the lives of its respondents as they have entered the job market, begun their postsecondary education, and formed families. The fifth follow-up survey (1986), which provides the data for this study, was administered to an unequal probability subsample of 14,489 of the original respondents (see Spencer, Sebring, and Campbell [1987]).

The original sample was conditioned on respondents having attained the senior year of high school. As the survey therefore omitted the population that failed to attain the senior year of high school, the survey is not representative of the national population. This selection bias is a minor issue for white mothers in the sample because data from decennial censuses and Current Population Surveys (CPS) show that few whites fail to reach the senior year of high school (Jaynes and Williams, 1989). But the selection bias is a more serious issue for black mothers in the sample because data indicate that up to 45 percent of blacks can fail to reach the senior year of high school (Fine, 1986; Jaynes and Williams, 1989; Brandon, 1991).

Results reported herein, therefore, pertain only to that subset of the population who reached their senior year in this grade cohort, and the conclusions cannot be generalized to those populations that failed to reach their senior year of high school (Jaynes and Williams, 1989).

The data from the 1986 follow-up survey have several strengths. Because the data contain information on child care use, incidence and costs, kin proximity, and familial income pooling, they are well suited for analyzing the importance of the extended family to the child care choices of mothers. The data also contain information on nonemployed women who use market child care; this allows for increased confidence in estimated effects because child care decisions are not censored by employment status.[9] Past studies of child care demand and female labor supply have lacked this

rarer population of child care users and therefore have had to make sample selection corrections to estimated parameters (Heckman, 1979). Hence, these data obviate the need for correcting for censoring by employment status (Hotz and Kilburn, 1991).

In addition, these data identify families' sources of income and pinpoint families' county and zipcode locations up until 1980. Thus, unlike most other data sources, the NLS'72 permits researchers to append individual-level information to county-level data. My model of child care choice can therefore identify income sources affecting child care demand and can identify county-level variables that can affect the supply of market care.

The fifth follow-up data contain information on 6,139 women. Of these, 4,281 are mothers who use child care. However, only 4,021 of these mothers (93.9 percent) specified the form of child care used. Of these, 1,458 (36.2 percent) rely only on parental child care. The other 2,563 (63.8 percent) use some form of market child care.

Because of missing data, this subsample of 4,281 mothers was further reduced to 2,427 married mothers. This final subsample consists of 1,043 (42.9 percent) mothers who rely only on parental child care and 1,384 (57.1 percent) who use some form of market child care.

As the data only contain information on the type of child care chosen, ordinary least squares (OLS) were used to predict child care prices for competing types of child care modes. I used OLS instead of taking the modal regional price for each child care mode as a representation of the market price of child care. (Analyses available upon request.)

Table 1 defines the variables used. Table 2 contains the weighted means and standard deviations of the variables that are included in the logistic models of child care choice. As Table 2 shows, the dependent variable is the child care mode chosen. Two types of child care are distinguished: parental care and market care.[10] Tables 3, 4, and 5 present the weighted parameter estimates and their standard errors for the use of competing child care modes.

TABLE 1
Summary Definition of Variables

Variable	Definition
Coresident kin	1 if lives with kin, zero otherwise
Mother close by	1 if mother close by, 0 otherwise
South	1 if lives in South, 0 otherwise
Northeast	1 if lives in Northeast, 0 otherwise
West	1 if lives in West, 0 otherwise
Midwest	1 if lives in Midwest, 0 otherwise
Only preschoolers	1 if children all less than or 6 years old, 0 otherwise
Only school-aged	1 if children older than 6 but less than 16, 0 otherwise
Children both ages	1 if children preschool- and school-aged children, 0 otherwise
Number of children	Total number of children in household
Family income	Husband's 1985 income, wife's 1985 income, and household's unearned 1985 income (in thousands of dollars)
Unearned income	Nonlabor sources of income in 1985 (in thousands of dollars)
Nonmaternal income	Husband's 1985 income and household's unearned 1985 income (in thousands of dollars)
Husband pools income	1 if husband pools income with wife, 0 otherwise
Husband's education	Husband's years of education
Husband's income	Husband's 1985 income (in thousands of dollars)
Blue-collar worker	1 if works in blue-collar job, 0 otherwise
Schooling activity	1 if schooling was only activity reported, 0 otherwise
Other activity	1 if only "other,"[a] 0 otherwise
Education	Years of education
Hours worked/week	Hours worked in the labor market
Price of time	Mother's predicted price of time
Race	1 if black, 0 otherwise
Marital status	1 if unmarried mother, 0 otherwise
Work experience	Years of full-time work for pay
Mother's own income	Mother's 1985 income (in thousands of dollars)
Price of child care	Predicted hourly price of child care
Market care	1 if only use market care, 0 otherwise
Kin care	1 if only use kin care, 0 otherwise
Informal care	1 if only use informal care, 0 otherwise
Center care	1 if only use center-based care, 0 otherwise
Other care	1 if only use other care, 0 otherwise
B.A. degree	1 if received college degree, 0 otherwise
Husband not working	1 if husband not working, 0 otherwise
Husband blue-collar job	1 if husband works in blue-collar job, 0 otherwise
Child care arrangements shared	1 if respondent says child care arrangements are not sole responsibility, 0 otherwise

[a]Question asked respondents what they were doing the first week of February 1986; responses included working, schooling and training, keeping house, and "other," among other things.

Note: Variables pertain to mothers, unless otherwise indicated.

TABLE 2
Means and Standard Deviations of Variables for Modeling Determinants of Child Care Choice

	Nonemployed Mothers	Working Mothers
Response Variable		
Use market child care	0.22	0.73
	(0.41)	(0.44)
Predictor Variables		
Proportion with only preschoolers	0.34	0.32
	(0.47)	(0.47)
Proportion with preschoolers and school-aged children	0.41	0.30
	(0.49)	(0.45)
Mean number of children	2.38	1.98
	(0.98)	(0.90)
Proportion whose mother lives close by	0.33	0.43
	(0.47)	(0.49)
Proportion who live with kin	0.04	0.06
	(0.20)	(0.23)
Proportion who are black	0.04	0.09
	(0.20)	(0.28)
Mean family income in 1985 (in thousands of dollars)	35.07	37.80
	(22.1)	(19.1)
Mean unearned income in 1985 (in thousands of dollars)	2.46	1.76
	(5.82)	(4.88)
Husband's mean income in 1985 (in thousands of dollars)	29.4	22.61
	(21.5)	(15.4)
Mean income of mother in 1985 (in thousands of dollars)	2.7	12.5
	(7.88)	(9.9)
Mean nonmaternal income in 1985 (in thousands of dollars)	30.85	24.27
	(20.8)	(16.06)
Years of education	13.9	14.0
	(2.05)	(2.07)
Husband's years of education	14.58	14.38
	(2.38)	(2.26)
Proportion whose husbands pool income	0.17	0.77
	(0.37)	(0.42)
Proportion who reported "other"[a] as activity	0.07	n/a
	(0.25)	
Proportion who reported "schooling" as only activity	0.06	n/a
	(0.24)	
Hours worked/week	n/a	33.37
		(11.75)
Work experience (years)	4.3	6.3
	(2.9)	(3.6)

(table continues)

TABLE 2 (continued)

	Nonemployed Mothers	Working Mothers
Predictor Variables		
Proportion who are blue-collar workers	0.18	0.20
	(0.39)	(0.40)
Log predicted price of time	1.78	1.94
	(0.51)	(0.59)
Proportion who live in the South	0.26	0.36
	(0.47)	(0.48)
Proportion who live in the West	0.16	0.13
	(0.35)	(0.34)
Proportion who live in the Northeast	0.27	0.18
	(0.42)	(0.38)
Predicted price of child care (per hour)	$3.40	$3.40
	(2.36)	(3.21)
N	961	1,466

Source: National Longitudinal Study of the High School Class of 1972, fifth follow-up survey (1986).

[a]Question asked respondents what they were doing the first week of February 1986; responses included working, schooling and training, keeping house, and "other," among other things.

IV. RESULTS AND DISCUSSION

The following set of descriptive statistics and subsequent set of reduced-form multivariate logistic regressions[11] try to resolve the conundrums discussed in section I.

Economic Factors and Married Mothers' Child Care Choices

The first set of models examines how prices and income sources affect child care choice. Section I described the debate over inconsistent child care price effects and outlined this study's thesis that identifying the effects of child care prices requires models that mimic local child care market conditions. Using county-level data, analyses here meet this requirement by generating price variation across local child care markets.

As shown in table 3, an employed mother or a mother in the full sample is less likely to use child care as its price increases, no matter the level of her own income, her husband's income, and her household's unearned income. The analyses in Tables 3, 4, and 5 detect that for the subsample of working married mothers, their demand for child care is sensitive to predicted child care prices at the county level. The computed price elasticity of -0.065 shows that for a 10 percent increase in the price of child care, the predicted probability of working married mothers using market child care decreases by about 0.65 percent.[12] These results suggest that previous researchers who failed to find that the cost of child care affected a mother's demand for it used measures of child care prices that did not capture local child care market conditions.

Apart from revealing child care price effects, my analyses also reveal price of time effects. Tables 3, 4, and 5 show that for the full sample and the sample of nonemployed married mothers, as the value of a mother's time increases, the odds that she will use market child care rather than parental child care greatly increase. These results support Becker's (1965), Gronau's (1977), and Brandon's (1991) models, all of which claim that as the opportunity cost of child care increases, all

TABLE 3

Determinants of Market Child Care Use among Married Mothers, Holding Aggregate Family Income Constant (Parameter estimates and standard errors)

	Full Sample of Mothers	Working Mothers	Nonemployed Mothers
Intercept	-4.64***	-4.48***	-4.97***
	(0.51)	(0.70)	(0.36)
Coresident kin	0.68***	1.07***	0.60*
	(0.23)	(0.34)	(0.36)
Mother close by	0.01	-0.15	0.01
	(0.10)	(0.13)	(0.19)
Race	0.34	0.16	0.95***
	(0.22)	(0.26)	(0.39)
Schooling activity	0.46*	n/a	0.74**
	(0.27)		(0.29)
Other activity	-0.32	n/a	0.31
	(0.30)		(0.31)
Work experience	0.05***	0.11***	0.03
	(0.01)	(0.02)	(0.03)
Number of children	-0.07	0.06	-0.12
	(0.06)	(0.08)	(0.10)
Children both ages	0.52***	0.37***	0.58***
	(0.13)	(0.17)	(0.25)
Only preschoolers	0.53**	0.60***	0.48***
	(0.15)	(0.18)	(0.28)
South	0.07	0.33**	-0.34
	(0.13)	(0.16)	(0.23)
West	0.32**	-0.09	0.59**
	(0.16)	(0.21)	(0.23)
Northeast	-0.02	0.001	-0.05
	(0.14)	(0.18)	(0.22)
Blue-collar worker	-0.31***	-0.56***	0.16
	(0.12)	(0.15)	(0.21)
Education	0.13***	0.17***	0.12***
	(0.03)	(0.04)	(0.05)
Hours worked/week	0.05***	0.01***	n/a
	(0.003)	(0.006)	
Husband's education	0.02	-0.02	0.05
	(0.02)	(0.03)	(0.04)
Price of time	0.25**	0.08	0.30***
	(0.09)	(0.12)	(0.16)

(table continues)

TABLE 3 (continued)

	Full Sample of Mothers	Working Mothers	Nonemployed Mothers
Price of child care	-0.03*	-0.04**	-0.03
	(0.02)	(0.02)	(0.04)
Family income	0.006**	0.01***	0.004
	(0.002)	(0.004)	(0.004)
Husband pools income	0.88***	0.79***	n/a
	(0.11)	(0.14)	
N	2,427	1,466	961
Log likelihood	-1225.83	-720.03	-471.76

Source: Author's calculations based on the National Longitudinal Study of the High School Class of 1972, fifth follow-up survey (1986).

* $p < .10$.
** $p < .05$.
*** $p < .01$.

mothers--whether they work or not--are more likely to choose market child care. Moreover, whereas nonemployed mothers are relatively more sensitive to variations in their opportunity costs, mothers in the labor market are more sensitive to changes in the price of market child care.

Because an employed mother's price of time differs from that of a nonemployed mother (table 2), my analyses also tested whether nonemployment activities and occupational characteristics independently influence the child care choices of working and nonemployed mothers. Tables 3, 4, and 5 show the results of this investigation. Mothers' occupational characteristics and mothers' nonemployment activities are indeed important predictors of child care choice. In both these samples, mothers in blue-collar jobs are more likely to rely exclusively upon parental care. Features associated with blue-collar jobs, such as shift work or staggered hours, may enable married working mothers to watch their children at home. Presser (1986) has documented that shift-working mothers are usually blue-collar workers and that they and their husbands take turns supervising their kids at home.

Any mother who spent a certain number of years in school is more likely to use market care than is another mother who spent less time in school (tables 3, 4, and 5). So, just as mothers who work must often use market care, mothers who attend school may also need to use market care.

Besides price effects, the results in table 4 indicate that a mother's own income significantly affects her child care choices. When a wife's own income increases, the odds increase that she will choose market child care over parental care. The table may also indicate that nonemployed mothers' own ability to pay for child care, measured by their past command over resources, is a critical component determining their child care use. For working and nonemployed mothers, a 10 percent rise in their own incomes increases the predicted probability of using market child care by about 0.65 percent and 0.44 percent, respectively.

The significant coefficients on "Mother's own income" support past research that finds that wives' abilities to pay are important determinants of child care choice. But some of these other

TABLE 4

Determinants of Market Child Care Use among Married Mothers
(Parameter estimates and standard errors)

	Full Sample of Mothers	Working Mothers	Nonemployed Mothers
Intercept	-4.39***	-3.07***	-4.81***
	(0.52)	(0.72)	(0.84)
Coresident kin	0.64***	1.08***	0.48
	(0.23)	(0.34)	(0.37)
Mother close by	0.02	-0.16	0.05
	(0.10)	(0.13)	(0.19)
Race	0.31	0.07	0.93**
	(0.22)	(0.26)	(0.40)
Schooling activity	0.50*	n/a	0.80***
	(0.28)		(0.30)
Other activity	-0.44	n/a	0.17
	(0.32)		(0.32)
Work experience	0.05***	0.10***	0.02
	(0.016)	(0.02)	(0.03)
Number of children	-0.07	0.07	-0.11
	(0.06)	(0.08)	(0.10)
Children both ages	0.53***	0.39***	0.57**
	(0.13)	(0.17)	(0.25)
Only preschoolers	0.55**	0.64***	0.51*
	(0.15)	(0.19)	(0.28)
South	0.05	0.30*	-0.39*
	(0.13)	(0.17)	(0.23)
West	0.33**	-0.06	0.58*
	(0.16)	(0.21)	(0.23)
Northeast	-0.02	0.03	-0.05
	(0.14)	(0.19)	(0.22)
Blue-collar worker	-0.30***	-0.54***	0.16
	(0.13)	(0.16)	(0.21)
Education	0.13***	0.17***	0.11***
	(0.03)	(0.04)	(0.05)
Hours worked/week	0.05***	0.006	n/a
	(0.004)	(0.006)	
Husband's education	0.02	-0.02	0.06
	(0.03)	(0.03)	(0.04)
Price of time	0.18***	-0.05	0.27*
	(0.10)	(0.13)	(0.16)
Price of child care	-0.03	-0.04*	-0.03
	(0.02)	(0.02)	(0.04)

(table continues)

TABLE 4 (continued)

	Full Sample of Mothers	Working Mothers	Nonemployed Mothers
Mother's own income	0.03***	0.04***	0.02**
	(0.007)	(0.01)	(0.01)
Husband's income	0.004	0.005	0.001
	(0.003)	(0.004)	(0.004)
Unearned income	0.02**	-0.01	0.05***
	(0.01)	(0.01)	(0.01)
Husband pools income	0.83***	0.73***	n/a
	(0.12)	(0.15)	
N	2,427	1,466	961
Log likelihood	-1218.68	-714.22	-463.44

Source: Author's calculations based on the National Longitudinal Study of the High School Class of 1972, fifth follow-up survey (1986).

* $p < .10$.
** $p < .05$.
*** $p < .01$.

studies focusing upon mothers' abilities to pay left untested whether other sources of income affect mothers' child care use (Duncan and Hill, 1974; Lave and Angrist, 1975; Robins and Spiegelman 1978; Leibowitz, Waite, and Witsberger, 1988; Blau and Robins, 1988).

These past studies had either insufficient data, which did not allow testing for effects of other sources of income, or data that did not permit distinguishing a wife's earnings from other sources of income. Such other sources of income include her husband's earnings and the household's unearned income. With the NLS'72 data, however, total income can be disaggregated, and other sources of income, such as husbands' earnings and unearned income, are identified.

After identifying the components that constitute aggregate family income, the analyses test whether wives' earnings are the only component of household income affecting child care choice. First, two additional sources of nonmaternal income are separately tested: (1) husband's labor income, which is defined as husband's 1985 earned income; and (2) unearned income, which is defined as the sum of all nonearned 1985 income.

Table 4 shows that only one source of nonmaternal family income significantly affects a married mother's child care choice: unearned income. The income of her husband has no effect. In addition, when the sample is divided based on present work status, results show that nonemployed mothers' child care use is sensitive to increases in unearned income. The predicted probability of their using market child care increases by about 0.99 percent when their unearned income increases by 10 percent.

The results in tables 3, 4, and 5 help explain the contradictory findings concerning the significance of family income with regard to a mother's child care arrangements. The statistical significance of reported income effects may result from different definitions of family income. Many past studies defined family income in their own way, but none juxtaposed the results using their definition with results using the definitions of other studies. Some studies do not even identify the

source of income, and fewer still explore the effects of different income definitions and income decompositions.

The changes in estimated income elasticities and predicted probabilities under different definitions of family income are again illustrated in tables 3 and 5. In tables 3 and 5, alternative definitions of income are used: (1) "Nonwage income" (table 5), which is the sum of husbands' 1985 labor income and all unearned income; and (2) "Family income" (table 3), which is the sum of husbands' and wives' 1985 labor incomes, and other unearned income. Only "Family income" has a discernible effect on child care use. This means that the level of a mother's income ultimately determines whether market child care is used. Adding her husband's earnings and the household's unearned income to her own earnings leads to no dramatic changes in demand. In fact, her husband's earnings combined with unearned income, which is defined as nonwage income here and in other studies of child care demand, have no significant effect. Results therefore indicate that a mother will use market care only if she earns enough money to pay for it herself. For nonemployed mothers, however, sources of unearned income are important.

The insignificance of husbands' incomes to mothers' child care choices has two explanations. One explanation, discussed later, focuses on how husbands allocate their incomes for collective consumption goods in the home. The other explanation, discussed below, draws upon Gronau's (1977) model.

According to Gronau's model, if husbands' incomes are treated as a source of nonwage income, then when husbands' incomes increase, working mothers, who prefer "goods-intensive" technologies, substitute hours in leisure for hours in the work force. Hours in home production are left unchanged. Thus child care services, regardless of how produced, remain unaffected. In addition, if increases in husbands' incomes are a pure income effect, then more leisure for nonemployed mothers could result. When nonworking mothers experience increases in their nonwage

TABLE 5

Determinants of Market Child Care Use among Married Mothers, Holding Nonwage Income Constant (Parameter estimates and standard errors)

	Full Sample of Mothers	Working Mothers	Nonemployed Mothers
Intercept	-4.76***	-3.68***	-5.05***
	(0.51)	(0.70)	(0.83)
Coresident kin	0.68***	1.04***	0.58
	(0.23)	(0.34)	(0.36)
Mother close by	0.02	-0.13	0.02
	(0.10)	(0.13)	(0.18)
Race	0.30	0.08	0.92*
	(0.22)	(0.20)	(0.39)
Schooling activity	0.49*	n/a	0.75**
	(0.27)		(0.29)
Other activity	-0.28	n/a	0.34
	(0.30)		(0.31)
Work experience	0.05***	0.11***	0.03
	(0.02)	(0.02)	(0.03)
Number of children	-0.07	0.06	-0.13
	(0.06)	(0.08)	(0.10)
Children both ages	0.49***	0.34***	0.56***
	(0.13)	(0.17)	(0.25)
Only preschoolers	0.52**	0.58***	0.46*
	(0.15)	(0.19)	(0.28)
South	0.07	0.33**	-0.35
	(0.13)	(0.16)	(0.23)
West	0.32**	-0.07	0.59**
	(0.16)	(0.21)	(0.23)
Northeast	-0.02	-0.005	-0.05
	(0.14)	(0.18)	(0.22)
Blue-collar worker	-0.31***	-0.57***	0.15
	(0.12)	(0.16)	(0.21)
Education	0.14***	0.18***	0.13***
	(0.03)	(0.04)	(0.05)
Hours worked/week	0.05***	0.01**	n/a
	(0.003)	(0.006)	
Husband's education	0.02	-0.01	0.06
	(0.03)	(0.03)	(0.04)
Price of time	0.29***	0.15	0.32***
	(0.09)	(0.12)	(0.15)

(table continues)

TABLE 5 (continued)

	Full Sample of Mothers	Working Mothers	Nonemployed Mothers
Price of child care	-0.02	-0.04*	-0.02*
	(0.02)	(0.02)	(0.04)
Nonwage income	0.002	0.003	0.002
	(0.003)	(0.004)	(0.004)
Husband pools income	0.88***	0.78***	n/a
	(0.11)	(0.15)	
N	2,427	1,466	961
Log likelihood	-1228.09	-723.45	-472.18

Source: Author's calculations based on the National Longitudinal Study of the High School Class of 1972, fifth follow-up survey (1986).

* $p < .10$.
** $p < .05$.
*** $p < .01$.

incomes, they can also substitute leisure for time in home production. Again, child care provisions remain unchanged.

Intrafamily Resource Allocation: Pooling of Incomes between Spouses

Evidence here supports Crawford and Pollak's (1990) thesis that working mothers are the sole demanders of child care services, even though such services are a collective good within families. Before judging husbands as unimportant to working wives' child care choices, however, other analyses tested whether differences in the ways that husbands' incomes are allocated can indirectly influence mothers' child care decisions.

Past child care studies, female labor supply models, and these previous analyses assumed that husbands' earnings are available to employed wives. Yet Lazear and Michael (1988) showed that the way in which a family budgets its money affects the amount of income available for goods and services that are jointly consumed by family members. Because past studies of the demand for child care did not have the benefit of Lazear and Michael's illustrations of the differences in intrafamily resource allocation, they could not consider how such financial structures can affect mothers' child care choices.

Since the present study can tap data on income pooling within families, it can test whether husbands affect employed wives' child care choices through an indirect mechanism: intrafamily income-pooling arrangements. Husbands who agree to pool their incomes into fungible "cash kitties" may believe that family welfare is increased relatively more by such actions. Their incomes combined with the incomes of other family members may cause wives to choose market child care.

The results in table 6 show that when husbands combine their incomes with others, wives are twice as likely to say that they share responsibility for arranging child care. Those husbands who share their incomes presumably have greater incentives to monitor child care decisions because they commit their earnings to collective family consumption goods such as market child care. The

TABLE 6

Characteristics of Husbands, Working Wives, Families, and Child Care, by Income-Pooling Behavior of Husbands

	Husbands Pooling Income	Husbands Not Pooling Income
Husbands' characteristics		
Income in 1985 (in thousands of dollars)	22.43	23.47
Unemployed (proportion)	0.02	0.02
Blue-collar worker (proportion)	0.43	0.40
Education (years)	14.41	14.25
Working wives' characteristics		
Race (proportion)	0.08	0.11
Hours worked/week	34.78	28.65
Predicted price of time	1.96	1.88
Education (years)	14.08	13.74
Work experience (years)	6.57	5.53
Blue-collar worker (proportion)	0.18	0.26
Own income in 1985 (in thousands of dollars)	13.57	8.98
Family characteristics		
Family income in 1985 (in thousands of dollars)	38.43	35.69
Unearned income in 1985 (in thousands of dollars)	1.70	1.96
Proportion with coresiding kin	0.04	0.09
Proportion whose children are all preschoolers	0.34	0.20
Proportion with preschoolers and school-aged children	0.30	0.28
Mean number of children	1.99	1.95
Child care characteristics		
Proportion of families that use market care only	0.78	0.58
Proportion of families that use relative care only	0.10	0.02
Proportion of families that use informal care only	0.16	0.03
Proportion of families that use day care only	0.11	0.03
Predicted price of child care (per hour)	$3.39	$3.45
Proportion of married couples who share child care arrangements	0.12	0.06
N	1,128	338

Source: National Longitudinal Study of the High School Class of 1972, fifth follow-up survey (1986).

cross-tabulations show that whereas 78 percent of working wives with income-pooling husbands use only market care, only 58 percent of working wives without income-pooling husbands use only market care. Therefore, for some working wives, income-pooling arrangements with spouses may offset the costs of services previously produced by the mother--such as child care. Table 6 also shows that for husbands pooling their incomes, their wives work more and have more work experience; these couples are also more likely to only have preschool-aged children.

Multivariate analyses in tables 3, 4, and 5 (column 2) show the effect of income pooling on the child care choices of working married mothers. The results suggest that the impact of husbands on employed wives' child care choices is related to household financial arrangements. Regardless of how income is defined, when husbands pool their incomes, working wives are more likely to use market child care.

The tables' results suggest that households' underlying financial structures affect the allocation of income for collective goods, such as child care. Hence, husbands' incomes may not directly affect their wives' child care choices because some household financial schemes do not map husbands' incomes into nonwage income, thereby making it unavailable for wives to buy child care services, even though such services are jointly consumed by household members. When mothers have access to extra sources of nonwage income, their budgets are relaxed and their child care choices change.

Unless studies can control for the financial structures that underlie household consumption decisions and allocation of resources, models of child care choice may be misspecified, and estimated effects of husbands' income on mothers' child care choices may be biased.

To complete the portrayal of factors affecting mothers' child care use, each table demonstrates how children's age structure and mothers' educational levels affect child care choice (see Leibowitz, Waite, and Witsberger [1988]). Women in this sample, as have women in other samples, choose age-appropriate child care. And a commonly occurring southern regional effect is again displayed--now

exclusively for nonemployed mothers, however. According to the regressions in table 4, living in the South decreases the probability that nonemployed mothers use market care. This effect may indicate, therefore, that although the South is known to have a higher supply of low-cost, center-based, child care (Leibowitz, Waite, and Witsberger, 1988), access to it is tied to mothers' work status.

V. CONCLUSIONS

The first contentious area that this study focuses on is the salience of different sources of income to mothers' child care choices. The results suggest that contradictory results on income effects relate to the inabilities of past studies to define and measure alternative sources of family income and then test for independent income effects. Moreover, the statistical significance and magnitudes of income effects on child care choice change across measures of income. Errors in income measurement, or exclusions of nonwage income from constructs of income, could have caused biased estimates of income effects.

Indeed, past studies that asserted that family income significantly affected child care choice may have really been imperfectly measuring the effects of mothers' earnings on child care use. A core insight coming from the present analyses of income effects is that if child care policies are founded on ability-to-pay schemes, then it is critical that policymakers assess who truly pays for child care, and where they get the money to pay for it. If mothers purchase child care out of their own earnings, income-tested child care subsidies should reflect this fact.

Furthermore, the analyses performed on effects of different sources of income lead to the conclusion that husbands' incomes do not directly affect mothers' child care choices; they may, however, indirectly affect mothers' child care use through the financial arrangements existing between them and their children's mothers. The data support this proposition, and analyses further imply that the only fathers who may act as potential child care providers are those fathers who are married to

mothers employed in blue-collar jobs. Hence, a more general implication is that patterns of income allocation within families may affect mothers' demand for market child care. If husbands do not pool their incomes, and thereby make their earnings available for collective goods--such as child care--then mothers' budgets are tighter and their child care choices change.

The other key disputed area is the role that prices play. The analyses establish that price effects are important to child care choice. The sensitivity of child care price effects to their level of measurement explains the irreconcilable results regarding price effects that other studies have reported. The results for price effects imply that even though the probability of using market child care for married mothers varies with the predicted price of child care, demand for child care is still price "inelastic." Hence, policies aimed at stimulating demand for market child care through price subsidies may be ineffective.

Finally, this study shows that many nonemployed mothers use market child care. Finding that nonemployed mothers pursuing schooling are more likely to use market child care raises a question similar to the one raised with respect to AFDC mothers: If nonemployed mothers want schooling, are child care costs a disincentive (Ellwood, 1986; Robins, 1989)? If market child care is too costly, the disincentive effects of child care costs on married mothers' human capital investments may be analogous to the disincentive effects of child care costs on AFDC mothers' labor force participation (see Killingsworth [1983]). Future research should seek to better understand the motives driving nonemployed mothers to use market child care. This research is important because child care policies, such as a child allowance program or income tax credits, affect all families, not just those with working mothers.

Notes

[1]Cleveland imputed a weekly price for each child who was enrolled in a given type of child care and who was within a given age bracket. Ribar computed an hourly cost of child care for each mother.

[2]In these researchers' data, there were twenty distinct geographic sites, including both SMSA and other census-defined non-SMSA county groups.

[3]Blau and Robins's results may be biased, however, because they utilized multinomial choice specifications that do not correct for a potentially serially correlated error term.

[4]Stolzenberg and Waite (1984) found, as expected, that as the population of children in a given location age, their child care needs change--and local child care markets reflect this.

[5]Some studies only consider husbands as a source of nonlabor income, which mothers can use to purchase market child care; other studies model husbands as a source of informal, low-cost child care. (See Heckman [1974]; Robins and Spiegelman [1978]; Morgan [1981]; Blau and Robins [1988]; and Presser [1986].)

[6]Crawford and Pollak (1990) argue that mothers are primarily responsible for child care on at least three dimensions: they make the arrangements, they take time off when the child is ill, and they pay for child care out of their discretionary earnings. Also see Zigler and Frank (1988), Ellwood (1986), and Hayes, Palmer, and Zaslow (1990).

[7]Assuming child care goods are substitutes--which the empirical literature suggests they are.

[8]As child care is a heterogeneous good, mothers are assumed to choose a child care type that has the mix of attributes that yields the greatest welfare.

[9]Other comparable child care data (e.g., those from the SIPP and the NLSY) ask child care questions only of working women.

[10]Multiple child care arrangements are observed in the data. But analyses are restricted to parental versus market child care arrangements. Parental child care is an arrangement where mothers use themselves or spouses for child care.

[11]The coefficients are interpreted as the effects of the predictor variables on the odds of using market child care relative to parental child care.

[12]The predicted probabilities and income and price elasticities are calculated at the sample means of all variables. I use sample means because they represent the typical family in my sample (Blau and Robins, 1988; Maddala, 1983). The predicted probability of using nonparental child care services was 51 percent and 19 percent for working and nonemployed mothers, respectively.

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