

Post-Divorce Transfers and the Welfare of Mothers and Children in the United States

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Abstract. In this paper we analyze the relationship between post-divorce private transfers (child support and alimony), mothers' economic independence and children's welfare using US data. Our empirical results show that mothers who receive child support and alimony from absent fathers are more likely to work and to spend a higher proportion of the income on child-related goods. We argue that the pattern of empirical results is consistent with there being significant externalities between parents even after divorce.

1. Introduction

The increase in divorce rates in most advanced countries and the predominance of female-headed families among the poor has generated much interest in the relationship between divorce and the welfare of women and children. The determination of welfare in divorced families depends on the different objectives and resources of fathers and mothers and the characteristics of the legal system. The allocation of

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time and resources is such a controversial social issue because the different agents are so diverse in terms of objectives and resources (Del Boca and Flinn (1993, 1994a).

While the allocation of resources and time to children is usually the outcome of a process in which parents in intact families play the main role, in non-intact households agents of societal institutions intervene in the inter-household consumption allocation decisions made by divorced parents. This occurs because of concern about the negative effects of divorce on the children's welfare. Divorce may have, in fact, a negative effect on one parent's motivation to spend resources (time and income) on the child, and on the overall diminution in resources controlled by one or both parents from the loss of economies of scale in household production and consumption (Weiss and Willis, 1985; Weiss, 1984).

The negative effect of the increase in divorce rate and out-of-wedlock births on mothers' and children's income has been observed in many advanced countries, but none has approached the US percentages (Table 1).

The number of female-headed families and their poverty rate in the US relative to other countries explains the greater concern, the larger number of studies and the large number of data sets available on these issues. While divorce rates and out-of-wedlock births are higher in the US, the relative economic status of single mothers and their children is significantly lower than in other advanced countries. The striking difference between the proportion of single mothers in poverty in the US and Sweden has been attributed mainly to differences in the welfare and employment policies directed towards female-headed families (Kamerman and Kahn, 1988; Del Boca, 1993; OECD, 1990). McLanahan *et al.* (1992), investigate the extent to which single mothers are at risk of being in poverty, using cross-country data. They show that single mothers who work have better chances of staying out of poverty.

Table 1. Female-headed households with children as a proportion of families with children (percentage)

	Female-headed families	In poverty*
Germany	13	25
Italy	8	14
Sweden	19	2
UK	14	10
US	26	51

Source: OECD, *Lone Parents* (1990).

*Poverty = 50% of median net equivalent income in each country (Bradshaw and Mitchell, 1991).

Using the Luxembourg Income Study, they predict poverty rates of single mothers who work and those who do not, showing that, although working reduces the probability of a single mother being poor, the risk is still very high. Table 2 reports some of the results comparing single mothers who work and those who do not.

Countries (such as Sweden) where mothers' labour market participation is encouraged by the presence of child care, part-time jobs and efficient child support collection, are those where women with children fare better after divorce. The most pervasive policy used in the US to reduce poverty rates of divorced (as well as never married) mothers is welfare benefits (aid to families with dependent children, hereafter AFDC), which has the negative aspect of decreasing labour supply of recipients of AFDC, given that under this program every dollar (after the first 50 dollars) of monthly market income decreases the AFDC payment one for one. Garfinkel and McLahanan (1986) found that welfare programs did have a relevant impact on living arrangements (i.e. female-headed households) as well as mothers' working decisions. Because of the institutional characteristics of the US welfare system, divorced mothers who receive AFDC are less likely to participate in the labour market, to receive child support transfers from the ex-spouse, and less likely to remarry, all events associated with higher income as well as higher welfare. On the contrary, divorced mothers who receive child support income or child care subsidies are more likely to participate in the labour market as well as to remarry (OECD, 1990; Menniti and Palomba, 1991).

2. Divorce and Economic Welfare

Most studies show that divorce has a more significant economic impact on mothers than on fathers, resulting in financial difficulties and

Table 2. Predicted poverty rates for single mothers*

	Working	Not working
Germany	13.25	41.54
Italy	10.04	36.06
Sweden	3.75	14.38
UK	14.96	22.06
US	29.56	69.25

*Predicted rates are based on coefficients from best fitting logistic regression models, including age and education (see McLahan *et al.* (1992) Table 4, p. 19).

often poverty for the custodial parent (the mother, in most cases). Especially in the US, the probability of being in poverty increases after divorce among children and ex-wives. When income is compared to need, divorced men experience on average a 24% rise in their standard of living in the first year after divorce, while divorced women and their children experience a 73% decline. As a result, in any given year, 50% of children in female-headed families will experience poverty versus 15% in two-parent families (Duncan and Hoffman, 1985, 1988; Weitzman, 1985).

When parents separate, economic difficulties arise as a result of the following: (1) the costs of achieving any given living standard are higher for two households than for one (Lazear and Michael, 1988; Weiss, 1984); (2) the income of the non-custodial parent (almost always the father) is usually much higher than the income of the parent who lives with children (almost always the mother); and (3) many fathers do not comply with child support orders (Weiss and Willis, 1985; Del Boca, 1986; Del Boca and Flinn, 1993).

Most recent research indicates that the main reason for the decline in welfare of children in divorced families concerns the low compliance rates of non-custodial parents with the levels of child support ordered by the courts. Recent national data on the distribution of child support payments show that only about 50% of non-custodial fathers pay the child support they owe.¹ Only about a quarter of custodial parents receive partial payment and a quarter received no payment at all.

Only recently (1988) has the reform of the child support system been proposed as an alternative non-welfare reform that would not have a negative effect on mothers' work effort. In contrast to several European countries, where child support reflects uniform guidelines, in the US child support is still determined by local judges, case by case. Three relevant objectives have been proposed to improve the system: improving the collection of child support (with a wage withholding system); increasing the child support awards (based on more rigid guidelines established on the basis of estimates of the costs of children); setting orders as a proportion of the non-custodial parent's current income rather than as a fixed dollar amount, in response to the infrequent adjustment of support orders.

An increase in child support awards may encounter severe limitations regarding fathers' ability, as well as willingness, to pay. Moreover, an increase in child support (in a percentage-based system) represents a tax, and hence may reduce fathers' labour supply and therefore award amount and collections. However, the non-custodial fathers' ability to pay child support has been estimated to be much higher than the actual

awards and payments (Garfinkel and Oellerich, 1989), showing that the use of normative standards and extending child support to all those eligible, would improve significantly the economic conditions of custodial families in poverty. Research has also shown that policies such as wage withholding do have a positive and significant effect on child support collections (Garfinkel and Klawitter, 1990).

Under this system, when the income of the non-custodial parent is too low, there would be a minimum child support benefit, child support assurance, that would go to mothers not because they are poor, but because they have a legal right to it (Garfinkel *et al.*, 1992). Consequently, custodial parents would no longer have to bear the entire burden of the (monetary and non-monetary) costs to collect the child support income from absent fathers. The advantage of successful child support reform is the possibility that the welfare costs may be reduced at the same time so the labour supply of divorced mothers is encouraged.

In this paper, we attempt to analyze the relationship between private transfers (child support and alimony), mothers' labour force participation and welfare levels of children in divorced households. We first analyze the income composition effect on the labour supply of custodial mothers in an attempt to determine whether the effects of non-labour income and income from private transfer are different. We then analyze the child-goods expenditure patterns of custodial parents receiving child support to verify whether their behaviour in terms of expenditure differ from that of parents not receiving it. We argue that determining whether composition effects exist is important in the analysis of the effect of child support transfers on the welfare of divorced parents and their children.

3. Child Support and Labour Participation of Divorced Mothers

As divorce and separation (as well as the number of unwed mothers) climbed during the 1970s and 1980s,² the number of mothers rearing children whose fathers were absent from home rose sharply. However, in spite of the efforts to improve the child support award and collection system, only half of these mothers received full child support payments.

Recent Census Bureau statistics show that the receipt of child support payment is related to mothers' labour force participation. This positive correlation was first observed by Grossman and Hayghe (1982) and Veum (1992) in a series of cross-tabulations.

Table 3. Labour force participation of divorced mothers by child support reciprocity

	Not awarded child support	Received child support
1978*	60.9	84.6
1988**	68.2	77.1

*BLS 1979 *Special Survey*.

**NLSY 1988 *National Longitudinal study of young women*.

Both studies report that mothers receiving money for child support were found to be in the labour force more often than those who did not, and were likely to work more hours. However, women receiving child support may also possess other characteristics associated with greater work effort. These socio-economic differences have been introduced by Graham and Beller (1989); O'Neill (1985); Robins and Dickinson (1985); and Bergman and Roberts (1988). These studies have shown that women receiving child support are more likely to work, and work longer hours, than women without it, even after conditioning on observable differences.

In the US, receipt of child support is complicated by the fact that many women who live alone with their children receive a welfare benefit (AFDC). Welfare benefits are reduced by nearly the entire amount of the child support payment, so a mother may not be better off financially after receiving child support payments.³ This means that if private transfers were to replace public transfers entirely, incentives to work would increase, given that public transfers contain a large marginal tax in earnings, while private transfers do not. For mothers who are not in welfare, an increase in child support payments would increase non-labour income, which would generally reduce hours of work. The sign of the effect is therefore an empirical question.

The basic equation estimated is:

$$P = \beta_0 + \beta_1 t + \beta_2 y_m + \delta Z + v \quad [1]$$

in which P is the probability of participating in the labour market, as well as the probability of being economically independent from welfare benefits, t is the private transfer (child support and alimony), y_m is the non-labour income, Z is a vector of observable preference shifters as well as wage determinants, and v is a disturbance term. This is the linear probability model; we account for the heteroskedasticity in the disturbance terms in the estimators utilized below. Based on the discussion above, we would expect that $\beta_1 = \beta_2 < 0$.

We analyze empirically the effect of private transfers on divorced mothers' labour market participation by using Consumer Expenditures Data (CES).⁴ We first test for the hypothesis that the effect of child support income and the effect of non-labour income are the same. The CES data only provide information on the mothers' expenditures and characteristics. The sample is composed by households headed by divorced women with at least one child under 18 years of age.

Table 8 reports means and standard deviations of dependent and independent variables. The divorced mothers' average yearly income is \$16,523 (excluding child support income) in 1987 dollars: 40% of custodial mothers have some college education or a college degree, and 22% are non-white. If we exclude the cases in which no transfer is received, the average annual child support payment is \$2,985 a year; including the zero receipt cases lowers the mean to \$1,873. Divorced mothers receive child support in 60% of the cases and this income source represents about 20% of their total and after tax income on average.

We select women with positive own income. In spite of our selection criteria, the characteristics of the sample members are not too dissimilar to those of the US population of divorced mothers.⁵ Average income of US divorced mothers is \$17,487 compared to our sample mean of \$16,527, and the child support income is \$3,027 compared to \$2,987 in our sample. The proportion of non-whites in the sample is 22%, probably low with respect to that in the population of households headed by divorced mothers, because of the sample selection we have used.

In investigating the effects of child support and non-wage income on participation decisions, we take into account that the child support amount received by the divorced mother may depend on the characteristics of the ex-spouses. This issue has been modelled in different ways in recent studies. Weiss and Willis (1985) model the post-divorce transfer received as determined by the bargaining between the ex-spouses, assuming cooperative behaviour, while Del Boca and Flinn (1993) utilize a non-cooperative framework. Beron (1988) considers the private transfer as determined only by the decision of the non-resident parent. Graham and Beller (1989) consider the receipt of the private transfer as dependent only on the characteristics of the custodial mother.

The data utilized in our empirical analysis pertain only to the mothers' households after divorce. No information is available as to the personal characteristics, income, or expenditures patterns of the divorced fathers. Therefore, because of data limitations, we have to

consider child support receipts only as dependent on the custodial mothers' characteristics, similarly to Graham and Beller (1989).

To account for the potential problem of endogeneity, we use a Wu-Hausman type test (Wu, 1973; Hausman, 1978) to examine whether child support is exogenous with respect to the determination of the employment behaviour. Table 4 reports the OLS results of income composition on custodial mothers' labour market participation. The standard errors reported in parentheses (referred to as Eicker-White) are consistent even when the error distributions are not identical in the population, though they are still required to be independent (Eicker, 1967; White, 1980). The OLS estimates show that, while the effect of mothers' non-labour income is negative and statistically significant, the effect of child support income is positive (even if not highly significant) on the participation decision of divorced women. Other variables such as mother's age and schooling have a significant effect.

To test for endogeneity, we include an exogenous predictor of child support in the employment equation and test for its statistical significance. The predicted value of child support is from a regression equation which includes mother's education, number of other adults living in the household, and region. The variables included are not highly significant statistically. Only the variable indicating mother's education increases the child support amount received, showing that its receipt is influenced to some extent by factors over which she has some control as was found in other studies (O'Neill, 1985). Unfortunately, our data set does not provide other instruments suitable for this task. The Wu-Hausman test is reported in the last row in Table 4. It indicates that the null hypothesis of exogeneity is questionable.

Table 4. Estimate of the effect of child support on mothers' participation (heteroskedasticity-consistent standard errors in parentheses)

	Ordinary least square	Instrumental variable
constant	-1.654 (1.343)	-1.334 (2.443)
<i>t</i>	0.014 (0.008)	0.012 (0.006)
<i>y_m</i>	-0.011 (0.007)	-0.002 (0.001)
schooling	0.035 (0.027)	-0.041 (0.022)
mother's age	0.004 (0.017)	0.003 (0.012)
race (non-white)	-0.009 (0.131)	-0.002 (0.011)
instrumented variable		<i>t</i>
test statistics		
$\chi^2(1)$	8.0312	
Pr	(0.004)	

Table 4 also reports the IV results, introducing t as an instrumental variable. The results are quite similar to the OLS estimates: the coefficient associated with t is positive, while that associated with non-labour income is negative. These preliminary results show that income composition has an effect on labour supply, as other previous studies have shown. Graham and Beller (1989), using US data, have found that an increase in child support appears to reduce hours of work by less than an equal increase in other non-wage income. According to their results, a \$1,000 increase in non-wage income other than child support would reduce labour supply by over four percent, while a \$1,000 increase in child support would reduce labour supply by less than 0.5%. Bergman and Roberts (1988) show that increasing the level of child support award by 50% would reduce the welfare dependency rate from 44% to 17%. Providing the mother with more child support would increase the probability that she will increase her paid work, becoming welfare independent. Ermish and Wright (1991), using UK data, have shown that, while an increase in welfare benefits would reduce the percentage of single mothers in employment, an increase in child support from fathers (as well as child care subsidies) would raise the percentage of single mothers working.

These results would suggest that child support has the effect of increasing income directly and indirectly by stimulating labour supply. Maritato and Robins (1992), using a US sample for Wisconsin, have analyzed the effect of establishing a system of policies enforcing child support collection, such as wage withholding, on the labour supply of custodial mothers, separating the effect for mothers who receive public transfer and those who do not. Their results are broadly consistent with theoretical expectations (positive effects for AFDC families, negative effects of a child support increase on non-AFDC families), but are not statistically significant.

Two interpretations have been suggested for the income composition effect (Graham and Beller, 1989). One is related with the nature of the private transfer as income source, characterized by higher uncertainty than other forms of income (such as property income or public transfer). Participating in the labour market provided a more stable form of income that could protect divorced mothers' households from the uncertainty of the receipt of private transfers.

Another interpretation of the difference between the effects of the two types of non-labour income on mothers' labour market participation decisions utilizes the public good argument. The income composition effect can be explained in a framework in which, even though divorced parents no longer cohabit, their welfare remains inter-

dependent if both derive utility from expenditure on a public good, their children.

In such a framework, the absent father continues to pay child support if the mother spends more on the public good (child-specific goods). If the father believes that the expenditure for his children will increase, he will be more willing to transfer resources to the mother. We assume that the father cares only about the expenditure on children and will keep transferring money to the ex-spouse only if some expected amount of child-good expenditure is purchased. The father is basically indifferent about how the mother complies with his expectations regarding expenditure on their children.

To comply with the father's expectations, the mother may either reduce her private consumption, or reduce her leisure time and participate in the labour market so as to increase expenditure on children without reducing her private consumption. In this framework, the decision of divorced mothers to participate in the labour market can be interpreted as a visible signal for the ex-spouse that she is increasing her total income and contributing to their children's welfare.

4. Child Support and Mothers' Expenditures

To examine the effect of the composition of a divorced mother's income on her expenditure patterns, we conduct an empirical analysis of the expenditures of divorced mothers on "child goods".⁶

In attempting to determine whether the receipt of child support income affects the expenditure patterns of custodial parents, and if so, the nature of the relationship, it is crucial to know whether children are private or public goods for divorced parents. If children are public goods, expenditure by either parent on the child are perfect substitutes. Since divorced parents are never simultaneously in the presence of the child, generally speaking, it seems natural to question whether such consumption externalities remain following divorce.

Del Boca and Flinn (1994b) provide an explanation for the observation that divorced mothers spend a larger proportion of their income for their children, when the proportion of child support is higher. In their model, both parents can spend directly on the child, and these expenditures (a public good) are determined in a non-cooperative framework. Transfers of income from the non-custodian to the custodian are accompanied by dollar-for-dollar reductions in public good expenditures by the non-custodian making the transfer.⁷ Since child support receipts by a custodial parent imply an equivalent reduction in

the income of the non-custodial parent, the composition of the custodial parent's income may be a significant determinant of their expenditure on the public good.⁸

The data utilized in our empirical analysis report only the expenditure of the mother (who presumably has custody of some or all of the children from the marriage) over the period of one year, so we focus our attention on the mother's demand function for child goods. To minimize the problems connected with having a large proportion of the sample reporting zero expenditure, we use yearly income and expenditure measures. To obtain these yearly aggregates, it is necessary to match households on the quarterly survey tapes; this was undertaken for the 1986–1989 period. Many households were lost because they could not be matched across all five quarters or because of missing variable problems. For a more complete description of the Consumer Expenditures Data, see Del Boca and Flinn (1994b).

The principal means we use for distinguishing between the private and public goods interpretations of expenditure on children involves a comparison of "propensities to spend" out of own income, y_i , as opposed to income received by the custodial parent transferred from the non-custodial parent.

We assume that the mother is the custodial parent (which is appropriate given the sample we use in the empirical analysis) and that any income transfer between parents is made from the father to the mother. Since the information is cross-sectional, we assume that prices are fixed and estimate Engel curves for the child-specific good, k . Consider the linear Engel curve:

$$k = \alpha_0 + \alpha_1 y_m + \alpha_2 t + \zeta \delta + \varepsilon \quad [2]$$

where t is the child support income, ζ is a row vector of observable preference shifters, δ is a conformable column vector of fixed parameters, and the random variable ε is a disturbance term which represents both approximation errors from the linearization of the (possibly) non-linear true Engel curve and also unobservable preference heterogeneity in the population of divorced mothers.

Table 8 shows that the households spend a small but not a trivial proportion of their income on the child-goods aggregate expenditures that we have defined as child-specific.

Table 5 reports the results of the estimate of the effect of child support transfer on child expenditure. The dependent variable is the total amount spent by the household on an aggregate category of child-specific goods, which consists of all expenditure for children and infants in the household in this equation, except child care. After-tax income

Table 5. Estimate of the effect of child support on child expenditure

	OLS (Eicker-White s.e.)		TOBIT (asymptotic s.e.)
coefficient	1	2	3
constant	-266.644 (232.533)	-81.876 (224.312)	-332.632 (259.522)
y_m	0.012 (0.006)	0.013 (0.006)	0.036 (0.013)
t	0.043 (0.018)	0.042 (0.019)	0.194 (0.049)
# boys 2-15	148.388 (61.530)	150.033 (62.425)	177.627 (60.356)
# girls 2-15	325.645 (95.571)	313.869 (86.484)	376.029 (68.571)
# others in HH	22.457 (113.75)	-46.054 (121.665)	54.041 (69.75)
region	no	yes	
test statistics prob under null	5.373 (0.020)	5.049 (0.025)	5.609 (0.019)

from all sources other than child support and alimony payments, and total child support and alimony payments, are included as regressors as well as other characteristics describing the household, boys and girls aged 2-15, and others in the household.

We have reparameterized [2] by including the variable $(y_m + t)$ and t in the regression instead of y_m and t . The coefficient associated with $(y_m + t)$ is α_1 , while the coefficient associated with t is $(\alpha_2 - \alpha_1)$. An asymptotically valid test in which the null posits equality of the coefficients on the two types of income and the alternative posits that the coefficient on child support income is strictly greater than that associated with other income rejects the null hypothesis at the 0.05 significance level. The tests statistics for each regression specification is reported along with the two-tailed probability of obtaining that value of the test statistics under the null hypothesis (in parenthesis). The differences in the coefficients are statistically significant at conventional level in all cases. These results suggest that the broadly defined category of child goods cannot be considered private (in the framework presented above).

We have performed tests of the null hypothesis using a Tobit model which explicitly allows for the possibility of corner solutions (i.e. zero expenditures on the child-specific good by the mother): see Table 5, column 3. Since such a relatively small proportion of the sample obser-

Table 6. Estimate of the effect of child support on child expenditure: instrumental variable model (heteroskedasticity-consistent standard errors in parentheses)

	Child-good aggregate	
	1	2
coefficient		
constant	-259.632 (299.522)	-77.877 (220.812)
y_m	0.019 (0.013)	0.012 (0.006)
t	0.095 (0.049)	0.125 (0.048)
# boys 2-15	150.627 (61.356)	139.962 (62.425)
# girls 2-15	344.029 (95.571)	319.659 (94.059)
# others in HH	41.041 (113.75)	-16.054 (121.665)
Instrumented variable	y_m, t	t

Notes: *The instruments were as follows:

For y_m : # household members - 1; region; schooling; mother's age and age squared.

For t : # boys 2-15; # girls 2-15; # others in HH; region; schooling; mother's age; non-white.

variations make no expenditure on the child-specific good (0.05 of the sample), the Tobit specification yields results very similar to the OLS specification.

Rejection of the null hypothesis of privateness generally implies that the OLS estimator will produce inconsistent estimates. We can define a consistent instrumental variables (IV) estimator for q given the availability of instruments, which is quite limited, since we have only information on the mother's household and no information on the father's.

Table 6 reports the coefficients of mothers' income and child support income on child expenditure, using a set of regressors representing characteristics of the household. The coefficients of interest, α_1 and $(\alpha_2 - \alpha_1)$, are quite stable across the two specifications (Columns 1 and 2), in which y and t , or only t are introduced as instrumented variables.

If only t is introduced as an instrumented variable, expenditures increase with the number of children in the household in an apparently reasonable way. These estimates indicate that while about 1.2 cents of every dollar of the mother's "own" income is spent on the child-specific good, about 12.5 cents of every dollar of child support income is spent on it. The computed value of the elasticity using the IV estimates shows that a one percent increase in the proportion of the mother's income from child support increases expenditures by about 30%.

We now explore the relationship between fathers' transfers, mothers' labour market participation and child goods expenditures. For this purpose, we estimate jointly mothers' participation decision on child-

specific goods and fathers' transfers, conditional on mothers' expenditures and other characteristics.

We estimate a bivariate probit. The specification is the following:

$$\begin{aligned} P &= \gamma_1 k + \mu_1 Z + \varepsilon_1 \\ T &= \gamma_2 k + \mu_2 Z + \varepsilon_2 \end{aligned} \quad [3]$$

where P is the probability of working, T is the probability of paying child support, and k is the child-specific expenditure; Z is a vector of characteristics of the mother. The distribution assumptions are:

$$E[\varepsilon_1] = E[\varepsilon_2] = 0$$

$$\text{Var}[\varepsilon_1] = \text{Var}[\varepsilon_2] = 1$$

$$\text{Cov}[\varepsilon_1, \varepsilon_2] = \rho$$

Table 7 reports the results of bivariate probit. The child-specific expenditure k positively influences the labour participation of the mother, and the father's transfer decision, conditionally on other characteristics such as schooling, race, and number of children aged 2–15 inclusive.

We test for correlation among the equations. Under the null hypothesis that ρ equals zero, the model consists of independent probits equations, which can be estimated separately. Under the alternative, the

Table 7. Bivariate probit

	Coefficients	St. errors
<i>P</i> (mother works)		
constant	0.093	(0.266)
<i>k</i> (child expenditure)	0.104	(0.133)
race	-0.054	(0.259)
schooling	0.855	(0.117)
<i>T</i> (transfers > 0)		
constant	0.446	(0.348)
<i>k</i>	-0.969	(0.270)
# boys 2–15	-1.891	(0.657)
# girls 2–15	-1.199	(0.633)
race	-0.412	(0.182)
schooling	0.755	(0.432)
ρ	0.410	
asym s.e.	0.247	
Prob	(0.090)	

joint estimation of the two probits gains efficiency. The square of the correlation coefficient divided by its asymptotic standard error has a χ^2 distribution. The correlation coefficient ρ is 0.410, the asymptotic standard error is 0.247: the probability of obtaining such a value (squared) is 0.09, which indicates some positive correlation. Unobservable factors that increase the likelihood of receiving child support also increase the likelihood of participating in the labour market. One of the relevant unobservable factors is certainly father's income which is not included in the equations and is likely to influence both decisions.

4. Conclusions

In summary, all the evidence we have examined points to the existence of an income composition effect in demand allocation decisions of divorced mothers. Mothers who receive child support from absent fathers spend a higher proportion of child support income for child-specific goods and are more likely to participate in the labour market. These results are at odds with the implications of the standard neo-classical utility-based model as well as non-cooperative household models in which no role is allowed for the composition of income in determining demand allocations across goods including leisure.

In this paper, we interpret the empirical evidence concerning the income composition effect by arguing that among divorced parents consumption externalities may still exist through expenditure on their children (the public good). The empirical results we have obtained point to the importance of considering the interactions between parents after divorce in terms of income transfers, expenditures and labour market participation decisions.

There are important implications for policies directed at increasing mothers' welfare after divorce. Understanding the labour market decision of divorced mothers eligible for child support is relevant for establishing policies directed to increase their welfare. Since private transfers increase the probability that divorced mothers participate in the labour force, a better enforcement of existing child support orders would increase mothers' income directly and indirectly, increasing their economic independence. As recent comparative studies have pointed out, child support enforcement policies, combined with more work opportunities for single mothers seem to be a more efficient way to reduce the income loss of mothers and their children after divorce, relative to public transfers.

Other important implications are relevant for the decisions of judges who establish child support guidelines. Since child support guidelines implicitly assume that the custodial parents spend all the child support on their children, it seems relevant to examine changes in the expenditure patterns of both divorced parents when attempting to determine the implications of income transfers between the parents for the welfare of children.

Our empirical results also indicate a relevant role for models of cooperative behaviour in which the actions of the parents are still inter-

Table 8. Descriptive statistics

	Mean	St. dev.	Positive-valued observations		
			#	Mean	St. dev.
Mother's age	37.85	6.10			
Non-white indicator	0.22				
High school diploma	0.44				
Some college	0.20				
College grad or more	0.20				
North-east urban	0.23				
Midwest urban	0.29				
South urban	0.25				
West urban	0.16				
# boys 2-15	0.63	0.77	76	1.33	0.57
# girls 2-15	0.71	0.68	95	1.20	0.43
# others in HH	1.38	0.54			
y_m	16527.46	13000.19			
t	1872.68	2490.48	109	2985.17	2563.17

Table 9. Labour supply and child expenditure

	Means and standard deviations	
	Receive child support	Do not receive child support
Participation	0.88	0.70
Weeks of work	34.9	31.2
Weekly hours of work	42.6	26.4
Wage	7.445	5.987
Total income	19,444	13,355
Child goods	798.33	548.88
Cases	(109)	(79)

dependent even after divorce, and the interactions in terms of transfers as well as participation decisions have significant consequences on children's welfare.

Notes

¹ US Bureau of Census (1989) *Child Support and Alimony*, Current Population Reports Series P-60 173.

² Divorced women aged 18 or over increased from 4.3% in 1970 to 14.3% in 1990. The frequency of births to unwed mothers increased from 26.4% in 1970 to 38.6% in 1990.

³ Benefits from AFDC are reduced dollar-to-dollar if the child support received is more than \$50 per month.

⁴ The Consumer Expenditure Survey is described in detail in BLS Handbook of Methods Bulletin 2285 (Bureau of Labour Statistics 1988, ch. 18).

⁵ In terms of educational attainment in the US population, the proportion of women not finishing high school was 25%; that with high school diploma was 48%; that with some college education was 18%, and that with college was 9%. The comparable figures for our sample are 16%, 44%, 20% and 20% respectively. Our selection of positive own income has resulted in white and highly educated women being over-represented in our sample.

⁶ Some descriptive analyses have been performed in which the expenditure patterns and income sources of intact and non-intact families are compared (e.g. Weiss, 1984).

⁷ When both parents spend money on public good before and after the child support transfer.

⁸ In their model, both parents spend money on the child and expenditures are co-ordinated in a Nash equilibrium. Drawing some theoretical results from the public economics literature, the implication is derived that a redistribution of income from fathers to mothers will lead to the father reducing his expenditure on the child, dollar for dollar of transfer, while the mother will increase her expenditure, dollar per dollar received. This is strictly true only if both parents spend money on the child before and after the transfer. As long as some proportion of sample members meet this condition, the coefficient on child support income will be greater than that on own income in a child expenditure function.

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