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APPLYING THE ECONOMIC MODEL OF CRIME TO CHILD SUPPORT ENFORCEMENT: A THEORETICAL AND EMPIRICAL ANALYSIS

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Abstract—Child support noncompliance affects both the family and the taxpayer. This paper models the decision to pay based on expected utility maximization. The amount unpaid is determined jointly with the expected enforcement probability. A two-stage estimation technique requiring OLS and probit is used. We improve upon previous problems with measurement error and sex-restricted data in deterrence and child support studies, the treatment of endogenous deterrence variables as exogenous, and the use of aggregate data. We find a joint relationship between the amount unpaid and the enforcement probability. Policies are suggested for increasing compliance and payments to the family.

Introduction

THE nonsupport of children affects recipients of child support and taxpayers through increased welfare expenditures. Noncompliance with support orders may be affected by incentives similar to those designed to deter criminal behavior. This paper analyzes noncompliance using a deterrence model which provides a theoretical base for the analysis of child support payment behavior.

In 1986, 8.8 million women lived with children under 21 whose father was absent, and about 4.4 million were due child support.[1] In fact, over half due child support received at most a partial payment. Of those receiving payments in 1985, child support averaged 15% of income. For those below poverty, child support comprised 27% of mean income. Just under two-thirds of what was owed was paid, the differential being about $3.7 billion (U.S. Bureau of the Census, 1987).

There have been few studies of child support payment issues and most have lacked any theoretical basis.[2] A common finding is that the absent father has primary control over support, but the results are fragmentary and inconclusive. Few support enforcement variables have been analyzed because of data limitations.

Noncompliance is a legal as well as social problem, presenting unique opportunities for research in the economics of crime. For most crimes, reporting, measurement of loss and perpetrator may be unreliable or simply unknown. In contrast, the obligor and the "take" are known precisely in support noncompliance.

The current research extends the deterrence literature by utilizing microdata often unavailable for analysis of criminal behavior. Further, a suspect assumption of many models, the exogenous probability of apprehension and punishment, is relaxed and an empirical approach accounts for the simultaneity of an unobservable and an observable variable. The use of socioeconomic variables as the predominant form of identification restriction has been criticized and a different approach is used here (Fisher and Nagin, 1978). The child support literature is extended by developing and testing a model utilizing a dataset not restricted to information from the female head.

The next section develops a theoretical model of the absent parent's decision-making framework and the child support enforcement agency's enforcement decision. The third section presents a test of the model. The concluding section discusses policy implications and future research.[3]

Theoretical Model

We utilize a variant of the portfolio model applied to income tax evasion.[4] The absent parent decides the amount of child support not to pay

[1] Most studies focus on women under child support orders because 90% of all single parent families with children are headed by mothers (U.S. Bureau of the Census, 1984, table 65). Consequently we assume a female head and an absent father.

[2] Major studies in child support enforcement include Cassetty (1978); Chambers (1979); Gordon et al. (1978); Cassetty (ed.) (1983); Robins and Dickinson (1983); Beller and Graham (1986); and Robins (1986).

[3] We have omitted discussion of the increasingly important federal Child Support Enforcement Program due to its relative newness and the lack of appropriate data on which to test our model. For a program overview see Maximus (1983).

[4] See, for example, Allingham and Sandmo (1972) and Cowell (1985).

(NP) based on the utility from his own income (I^{AP}) and from income accruing to the custodial family (I^{CP}). His decision is predicated on the knowledge of the risk of enforcement and the possible penalty.

We assume two possible states of the world. In the first, no legal action is taken regardless of amount of obligation (ORD) withheld. In this state the father receives

$$I^S_{AP} = I^{AP} - (ORD - NP)$$

while the custodial parent receives

$$I^S_{CP} = I^{CP} + (ORD - NP).$$

In the second state, non-fulfillment of the obligation is detected and successfully enforced, resulting in collection of unpaid child support. Further, a penalty is specified as a fixed proportion, T, of the amount unpaid. Until recently an order to pay the arrearage has been the extent of most enforcement, implying $T \leq 1$. However this is changing. For example, Public Law 98-378 allows a 3% to 6% penalty on late payments. We assume the more current specification, i.e., $T > 1$. Given the penalty structure, the absent parent's own income if he is unsuccessful is

$$I^U_{AP} = I^{AP} - (ORD - NP) - TNP.$$

Generally, penalties on the absent parent are either added to the public coffers or cannot be appropriated as in some states where a jail sentence may be imposed. Hence, the custodial family is assumed not to benefit by the assessment of penalties, and its income if the absent parent is unsuccessful is

$$I^U_{CP} = I^{CP} + ORD.$$

The probability of being caught is denoted by p. Under the von Neumann-Morgenstern postulates, the absent parent is assumed to choose NP to maximize the multivariate expected utility function

$$\max\{ EU = (1 - p)U(I^{AP} - (ORD - NP),$$
$$I^{CP} + (ORD - NP))$$
$$+ pU(I^{AP} - (ORD - NP) - TNP,$$
$$I^{CP} + ORD)\}. \tag{1}$$

Comparative Statics

Our model can determine how the optimal value of NP varies with each of the exogenous variables, i.e.,

$$NP = f(p, T, I^{AP}, I^{CP}, ORD). \tag{2}$$

Comparative static analysis using the implicit function theorem yields[5]

$$\delta NP / \delta p < 0; \tag{3}$$
$$\delta NP / \delta T < 0; \tag{4}$$
$$\delta NP / \delta I^{CP} > 0; \tag{5}$$
$$\delta NP / \delta I^{AP} \gtrless 0; \tag{6}$$
$$\delta NP / \delta ORD \gtrless 0. \tag{7}$$

The theoretical results (3) and (4), indicating that increases in the probability and the severity decrease the amount unpaid, requires a positive marginal utility of income and negative own second partial derivatives, i.e., $U_{11} < 0$ and $U_{22} < 0$. The third result, an increase in the custodial family's income leads to more support unpaid, requires the additional assumption $U_{12} = 0$.[6] Put intuitively, the absent parent gets utility from increases in both own and custodial parent's income. A rise in the custodial parent's income leads to an adjustment in the amount paid so that own income increases as well.

The indeterminate result of an increase in the father's income can be understood using the multivariate analog to the assumption of a decreasing Arrow-Pratt measure of absolute risk aversion (Duncan, 1977). An increase in the absent parent's income leads to less paid since the parent becomes more willing to take chances at higher income levels. Offsetting this, the parent will be willing to pay more since he obtains utility from the custodial family being better off. Which effect dominates cannot be determined theoretically. The ambiguous effect of an increase in the amount ordered turns on an analogous argument since it can be shown that a higher order is similar to a decrease in income. While the amount paid would be expected to increase, the effect on the amount not paid cannot be determined since the amount ordered also rises.

[5] The derivation of all comparative statics is available from the author.

[6] Assuming $U_{12} > 0$ implies the absent parent gets more satisfaction from another dollar of income to himself if the custodial family is richer rather than poorer. Alternatively, $U_{12} < 0$ would imply that the absent parent gets less satisfaction from another dollar if the custodial family is richer rather than poorer. In the absence of empirical evidence as to the best assumption, we assume $U_{12} = 0$.

The Problem of Enforcement—
The Endogeneity Issue

A unique aspect of child support enforcement is that the obligor is always known. Therefore, while the amount paid is likely based on some subjective probability of the likelihood of apprehension and conviction (p), the parent must surely consider that his actions will influence this likelihood. Not only is NP a function of p, but p is a function of NP.

We rewrite (1) to account for the endogenous p. The absent parent's decision, then, is to choose NP to

$$\max\Big\{ EU = (1 - p(NP, \tau)) \\ \times U(I^{AP} - (ORD - NP), \\ I^{CP} + (ORD - NP)) + p(NP, \tau) \\ \times U(I^{AP} - (ORD - NP) \\ - TNP, I^{CP} + ORD)\Big\} \qquad (8)$$

where a shift parameter, τ, has been added to the probability function. It is assumed that $\delta p/\delta NP > 0$; $\delta p/\delta \tau > 0$. To assure a maximum we assume $\delta^2 p/\delta NP^2 \geq 0$, a sufficient condition which in certain cases may be relaxed with no change in the results.

Reworking the comparative statics yields the same results as in (4), (5), (6), and (7). In place of (3), we have

$$\delta NP/\delta \tau < 0.$$

This is similar to (3) but reflects a shifting of the probability function, and requires the additional assumption of $\delta^2 p/\delta NP\delta \tau \geq 0$.

For empirical applications the probability function needs additional specification. We assume the parent forms his expectation of p from knowledge of the enforcement agency's goals which are to seek to maximize expected net child support subject to its budgetary allocation.[7]

The agency is assumed to channel resources against parents expected to add the largest net payments. The greater the difference between the marginal gains and the marginal costs of enforcement, the more likely resources will be expended on enforcement. The agency's decision is

whether to undertake an enforcement, and the parent forms his expectation by anticipating the agency's determination to enforce.[8] The agency's expected net payoff derives from the amount still owed (NP), the cost of enforcement (C), the agency's budget (B) and its expectation of successful collection, a function of the absent parent's ability to pay and characteristics of the enforcement environment (EE).

Other influences on the agency may be the resources available to, and the initiative taken by, the custodial parent. Agencies may have an incentive to enforce against absent fathers who have AFDC mothers since states may keep support paid to AFDC beneficiaries when the payments do not exceed the grant. Also, AFDC mothers must help the agency obtain support, lowering the costs of enforcement. Lower income, then, might increase the probability of enforcement. An additional impetus for enforcement may come from complaints by the parent of delinquent payment behavior (R^{CP}), not always known in non-AFDC cases.

Given the discussion above, the absent parent's probability of being subjected to enforcement, p, then, is a function of the same variables influencing the agency. This probability might be reinterpreted as the agency's determination to enforce where, as their determination increases, an enforcement becomes more likely. The probability function is

$$p = d(NP, C, I^{AP}, I^{CP}, R^{CP}, EE, B). \qquad (9)$$

Empirical Model

The system to be estimated is given by (2) and (9). Most sources of child support information lack some variables necessary to estimate this model. For example, a key model element is that the absent parent decides the amount to pay. Since most child support data are derived from the custodial parent, the payment may be misrep-

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[7] This is a first approximation. A number of assumptions have been suggested for bureaucratic agencies unable to directly appropriate the difference between the revenues they generate and their costs. See Goode (1981).

[8] In a more complex model, their choice would be the type or amount of enforcement where no enforcement would be one choice. Also, a formal model would include all other parents in the caseload. The support-collection potential of these other parents would influence the agency's resource allocation decision. We simplify and assume the parent takes the actions against other parents as independent of the decision to enforce against him.

resented. Another problem is lack of information on enforcement, e.g., The Panel Study of Income Dynamics, or limited information on enforcement, e.g., The Survey of Income and Program Participation.

Our data are a random sample of all "divorce and paternity cases filed in the Genesee County [Michigan] Circuit Court that had an active support order for at least eighteen months, at least one day of which was in 1969 or 1970" (Chambers, 1979, pp 285–286).[9] The sample contains only men, and is restricted to divorced individuals since never-married cases would necessitate a broader model that includes the paternity adjudication process. The use of a single county restricts the generality of the results, not a severe limitation as a test of a deterrence model. However, in terms of general social policy any conclusions must be carefully drawn. A further restriction on generality is the time period covered. Since this period, a national child support enforcement office has been established and federally mandated laws concerning child support have been passed, but much of the legislation was inspired by the Michigan program.

The model implies that the enforcement environment is important to the absent father's assessment of the probability of enforcement. Variance in the county's enforcement environment is captured through the identity of the officer responsible for each absent parent. Since officer identity is only known in 1970, a 1970 cross-section was created with each officer represented by a binary variable. If officers acted in concert using rigid rules then very little variation would be observed. For our data this is not a problem since, "[with] only a few announced agency guidelines, these officers exercised nearly total control over the enforcement efforts... in their caseloads" (Chambers, 1979, p. 169).

Model Selection

Estimation is complicated by the connection between the probability and severity of enforcement in Genesee, by the simultaneity of amount not paid and probability of enforcement and by the unobservable character of the absent

father's perceived probability.[10] The theoretical model treats the probability and severity as separate variables, but here, the variables cannot be disentangled because the enforcement officers could influence both the enforcement type and the punishment, both judicial and nonjudicial.[11] We therefore include an appearance before a judge in the probability of an enforcement and do not measure severity as a separate variable.

To facilitate estimation we define a binary variable, y, indicating when we observe an enforcement taking place or an appearance before a judge on a noncompliance charge. We posit an underlying continuous variable, Y^*, representing the agency's desire to enforce, and assume the father's perceived probability is directly related to that desire. When the father perceives that the agency has a sufficiently high desire, an enforcement is observed. Our empirical model in general form is

$$NP = \alpha_1 Y^* + X'\beta_1 + C'T_1 + \epsilon_1 \qquad (10)$$
$$Y^* = \alpha_2 NP + X'\beta_2 + D'T_2 + \epsilon_2 \qquad (11)$$

where

$$\begin{array}{lll} y = 1 & \text{if} & Y^* > 0 \\ 0 & \text{if} & Y^* \leq 0 \end{array} \qquad (12)$$

where

NP = amount of child support not paid by the absent father

Y^* = the agency's desire to enforce

X = vector of common exogenous variables

C = vector of exogenous variables unique to equation (10)

D = vector of exogenous variables unique to equation (11)

y = 1 implies an enforcement action or judicial appearance

  = 0 otherwise.

The ϵ's are assumed independently and identically distributed bivariate normal.

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[9] A clear explanation of the data is in Chambers (1979, pp. 283–291).

[10] In our dataset many parents pay more than their current obligation, i.e., $NP < 0$. This is probably due to informal agreements between spouses and to the paying of arrearages. This eliminates the potential problem of a significant pileup at $NP = 0$.

[11] Nonjudicial types include warning letters that might threaten jail and wage assignments. Judicial outcomes might also include wage assignments or being jailed for contempt of court. I am appreciative of an anonymous referee for recognizing this fact.

TABLE 1.—MEANS AND STANDARD DEVIATIONS OF VARIABLES IN THE DATASET

Variable	Mean	Standard Deviation
Enforcement Environment[a]		
Total Number of past enforcements	4.18	4.68
Income of Mother		
Weekly earnings at time of divorce	39.19	38.73
Mother held white collar/skilled job	0.30	0.46
Amount of Child Support Ordered	1456.62	836.73
Income of Father		
Father held white collar/skilled job	0.41	0.48
Age of father in 1970	35.78	8.00
Weekly earnings at time of divorce	105.48	56.19
Father's Feelings Toward Recipient Family/		
Cost of Enforcement Against Father		
Number of children under support order	2.30	1.33
Growth of arrearage over previous year	0.49	0.50
Father left county since final order	0.15	0.36
Number of months since final order	55.39	48.50
Father registered visitation complaint	0.22	0.41
Mother complained about support not paid	0.06	0.24
Control Variables		
Arrearage modified during 1970	0.11	0.31
Endogenous Variables		
Amount Not Paid in 1970	353.87	796.73
Enforcement or judicial appearance in 1970	0.38	0.49

[a] Not shown are 20 dummy variables representing individual enforcement officers and a missing value dummy.

We use a two-stage estimation method following Maddala (1983, pp. 244–245).[12] Reduced form equations are estimated using ordinary least squares (OLS) on NP and probit on y. Estimated values for the endogenous variables are then substituted into the structural model, equations (10) and (11), respectively. These models are then re-estimated, using OLS on NP and probit on y. The resulting parameter estimates are consistent. The standard errors are biased, however, since they do not account for the estimated values of the variables NP and y in the second stage. The correct standard errors are formed by combining the first stage asymptotic covariance matrix, the estimated covariance across the first stage residuals and the $X'X$ matrix from the second stage.

Empirical Proxies and Expected Signs

The empirical measures are presented in table 1.

NP is the difference between amount owed at year's end 1969 and amount owed either at year's end 1970 or at the enforcement. As noted, p is empirically based on the existence of an enforcement or judicial appearance in 1970.

Current (1970) incomes of the parents are not available. Weekly earnings at divorce, whether the parent is in a skilled job at divorce and father's age are therefore used as measures of potential earnings. Mother's age is not included due to high correlation with father's age. The income proxies for the custodial parent are omitted from the probability equation due to the unique situation in Genesee where "Even in cases in which the mother had independent resources, she rarely retained an attorney of her own to enforce the court order.... She relied on the agency..." (Chambers, 1979, p. 169). No agency budget data are available, though this is not a problem since we use a single year's cross-section where the budget is fixed. In a time-series analysis the budget would be a more important variable. Enforcement cost would likely increase if the absent father left the county. It may decrease if the female head complains since she may present additional information on the husband's circumstances.[13]

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[12] Due to the exploratory nature of this research, we choose a two-stage estimation technique which, while less efficient than alternative full information maximum likelihood methods, is consistent, computationally more tractable and less sensitive to specification error.

[13] Terry K. Adams, an original researcher involved with the data, indicated in correspondence that mother's complaints and father's leaving the county should be cautiously interpreted given their basis in self-reports.

A variable indicating the arrearage increased over the preceding year, rather than the actual arrearage, is included to capture father's unobservable characteristics known to the agency which tend to limit enforcement success. In a dynamic model, serial correlation is expected in the error term of the nonpayment equation to the extent that the actual arrearage acts as a lagged endogenous variable, resulting in contemporaneous correlation with the error term. Estimation would require time series data unavailable for all variables in our model (Fisher and Nagin, 1978). The binary representing growth in arrearage is used as a proxy for actual arrearage. To detect if growth in arrearage is itself endogenous a specification test was performed (Spencer and Berk, 1981). Endogeneity was not indicated.

The number of children, the length of time since the final order and whether the father has registered a visitation complaint are included to account for the relationship between the father and the custodial family. Both more children and visitation complaints may indicate a tighter relationship and so decrease the amount unpaid. However, fathers might use visitation problems strategically to justify greater amounts not paid (Weitzman, 1985, p. 297).

Length of time since final order seems an indeterminate influence; contact between father and children decreases, reducing likely payment, but bitterness over divorce dissipates with the reverse effect. If a father lives in an area where there is a credible general deterrence policy then the amount unpaid may fall, with the opposite effect from a noncredible policy (Lempert, 1981–82).

Enforcement is measured by number of previous enforcements against a father and by current enforcement officer. A set of 19 dummy variables is included representing the 20 officers in our sample and one additional variable indicating a missing value for this variable.

Empirical Results

The empirical results are given in table 2. The fitted probability in the not paid equation is significant and with theoretically expected sign.[14] An

increase in probability does decrease the amount unpaid. Growth in arrearage, assumed to capture unobservable variables that increase noncompliance, increases amount unpaid.

Though theoretically indeterminate, increased amount ordered significantly increases amount unpaid. A dollar increase increases the amount unpaid by about 11 cents. This implies that 89 cents per additional dollar ordered will be paid, helping the family but not on a dollar for dollar basis.

Skilled fathers decrease the amount unpaid, but the other current income proxies are insignificant. This provides weak support for the hypothesis that higher income leads to less support unpaid. Indeed, being skilled may reflect a stronger sense of responsibility associated with education rather than income effects (Cassetty, 1978, p. 45).

An increase in the mother's income at divorce supports the expectation that more support will be unpaid. Skilled mothers, though, received 171 dollars more than otherwise. Here, the skilled variable probably indicates a greater ability to deal with noncompliance, by way of education.

The final set of variables proxy feelings the father has for mother and children. Apparently, fathers registering visitation complaints are more strongly tied to their children and are not acting strategically. Longer periods of time since final order lead to less support unpaid providing support for the general deterrence or increasing family ties theories. Alternatively the result may represent the renegotiation of the support award over time for which our model does not control.[15] The result that an increase in the number of children leads to more support unpaid is contrary to expectations and to previous results. Alternative specifications indicate this is a robust result for our data.

From the probability equation we find the theoretically expected relationship that as the amount unpaid increases, the probability increases. Further, more past enforcements lead to a greater likelihood of a current enforcement. This suggests that the enforcement agency learns from previous efforts and may concentrate on particular noncompliers. As a test of the impact of enforcement officers, a likelihood ratio test of their combined

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[14] A parameter estimate in the not paid equation is significant if the null hypothesis can be rejected at the 0.10 level of significance. A one-tail test is used when the theoretical model provides determinate results and a two-tail test when there are indeterminate results. Since the probability equation was not

formally developed we use a two-tail test when discussing its parameter estimates. The magnitude of the probability coefficient is not interpreted due to is derivation from a dichotomous variable (Maddala, 1983, pp. 242–245).

[15] This possibility was suggested by a referee.

TABLE 2.—SECOND STAGE AND REDUCED FORM RESULTS OLS ON AMOUNT NOT PAID; PROBIT ON EXISTENCE OF ENFORCEMENT

	OLS		Probit		Reduced Form	
	Parameter Estimate	Asymptotic t-ratio	Parameter Estimate	Asymptotic t-ratio	Parameter Estimate	Asymptotic t-ratio
Intercept	329.92	1.63	-4.67	-1.28	731.48	1.89
Expected Amount of Support Not paid ($100s)			0.002	2.76		
Expected Probability of Enforcement	-40.23	-1.41				
Enforcement Environment[a]						
Total number of past enforcements			0.168	4.98	-22.19	-2.27
Income of Mother						
Weekly earnings at time of divorce	1.58	1.51			1.58	1.37
Mother held white collar/skilled job	-171.50	-2.00			-172.53	-1.85
Amount of Child Support Ordered	0.11	2.03			0.11	1.87
Income of Father						
Father held white collar/skilled job	-195.45	-2.49	0.472	1.81	-214.54	-2.51
Age of father in 1970	-7.80	-1.45	-0.010	-0.67	-5.77	-1.00
Weekly earnings at time of divorce	-0.54	-0.74	-0.001	-0.61	-0.26	-0.32
Father's Feelings Toward Recipient Family/ Cost of Enforcement Against Father						
Number of children under support order	72.08	2.22	-0.895	-2.10	57.29	1.56
Growth of arrearage over previous year	663.72	8.89	-0.867	-1.97	605.12	7.33
Father left county since final order					520.30	4.63
Number of months since final order	-2.97	-3.19			-2.69	-2.44
Father registered visitation complaint	-167.04	-1.91			-129.37	-1.37
Mother complained about support not paid			7.101	1.44	-221.84	-1.41
Control Variables						
Arrearage modified during 1970	-229.86	-1.94	0.764	2.09	-244.04	-1.87

N = 302
OLS: F (with 12,289 degrees of freedom) = 12.816; PROB > F = 0.0001 R² = 0.35
Probit: Likelihood Ratio Test (Chi-Sq. 31 degrees of freedom) = 137.64; Prob > 0.0001
Reduced: F (with 36,265 degrees of freedom) = 6.093; Prob > F = 0.0001 R² = 0.45

[a] Not shown are 20 dummy variables representing individual enforcement officers and a missing value dummy.

influence on the probability of an enforcement was performed. Their contribution exceeded the 99.5% level of confidence.

The variables indicating a higher cost of enforcement, whether the father left the county and an increase in the arrearage, both predictably lead to a lower probability. The variable indicating the mother complained is insignificant, perhaps because "enforcement officers learned of delinquency...not from the mother but from computer printouts...." (Chambers, 1979, p. 169). The only significant variable of those related to father's current earnings is the father's skill level. This may represent a focus on those with a higher ability to pay. It may also be that skilled workers are easier to locate and act against since they have more job stability.

Policy Implications

The policy goal may be to increase the amount paid to the custodial family or to reduce the amount unpaid. These may conflict. We consider the implications for policy-makers by focusing on the significant variables in the reduced-form model for the amount unpaid, given in table 2.[16]

The results suggest that increasing the order by a dollar will lead to an 11 cent increase in the amount unpaid. Given the goal of increasing payment, a policy of increasing the order would be appropriate since it leads to more being paid. Clearly the order cannot be continually increased, but our data are unable to capture what happens in this case. Increased promotional efforts designed to emphasize the responsibility of the father and the avenues available to the mother regarding child support might be effective given the significant skilled variables.

A variable under limited control of the enforcement agency is the arrearage. While statistical problems with this variable have already been discussed, it seems clear that a focus on arrearage can increase both compliance and family resources. It has been suggested that even if the initial order were reasonable, "the overwhelming accumulation of unpaid past support...persuades many a basically willing father to flee from responsibilities that have become unrealistic"

(Krause, 1981, p. 82). A policy of immediate and continuous enforcement, given the significance of number of enforcements, would seem appropriate for fathers who become delinquent. This reasoning supports recent legislation which mandates states to set up automatic wage withholding systems for both welfare and non-welfare cases.

Finally, when an obligor leaves the county we find an increase in the amount not paid of $520. Reducing the cost of interstate and intrastate enforcement, therefore, would be expected to decrease the amount not paid. Recent initiatives include the federal program to assist in the location of absent parents by matching social security numbers with Internal Revenue Service records and the program to collect arrearages from federal income tax refunds.[17]

Future Research Directions

A natural extension of the present work would be a similar analysis on a nationally representative sample. Expansions could include endogenizing existence and magnitude of support orders and extending the model to unmarried parents. Finally, the enlargement of the federal government's role in enforcing orders should be examined as data become available.

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[16] The full reduced-form equation which does not exclude enforcement binaries is available from the author.

[17] As of August 1986 the IRS had seized over $300 million from parents owing child support. This represents about 6% of estimated annual arrearages (*Wall Street Journal*, 8/20/86, p. 1).

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