

Salience and Payment Methods: The Effect of Child Support Withholding on Father-Child Contact *

Samara Potter Gunter[†]
University of Michigan/Colby College

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Abstract

In the 1990s, states passed laws requiring employers to withhold child support from earnings in all child support cases. I examine whether this change in the default payment method for child support affected fathers' frequency of contact with their children and their provision of in-kind support. I use the within-state variation in the timing of child support orders around withholding laws and the variation in implementation of withholding over states and time to instrument for child support withholding status. For fathers who are not in arrears (and for whom the laws determined payment method but do not affect payment amount), withholding reduces the amount of time fathers spend with their children and the likelihood of providing in-kind support. I consider multiple explanations for this response to change in payment method, including salience and parental bargaining. My results are consistent with previous experimental work suggesting that automatic payment methods such as credit cards or automatic payments alter consumption behavior.

1 Introduction

In December 2007, the Federal Reserve announced that more than two-thirds of non-cash payments are now made electronically. Check-writing declined by an average of 6.4 percent per year between 2003 and 2006, while automated clearinghouse and debit card payments grew at more than 17 percent annually. In a Mastercard Worldwide (2006) survey, consumers

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[†]University of Michigan Job Market Candidate and Colby College Visiting Assistant Professor. Contact information: Department of Economics, 611 Tappan Street, University of Michigan, Ann Arbor, MI 48109. Email: srpotter@umich.edu. Website: <http://sitemaker.umich.edu/sgunter>.

cited convenience, stress relief from knowing bills would be paid on time, and reward incentives as factors that make automatic payment methods like debit and credit card use and online bill pay attractive. Yet more than a quarter of respondents also listed reluctance to lose control as a reason to resist debit card use, which suggests that electronic payments not only bring convenience but may also affect spending behavior or understanding of financial matters. With rapid changes in the use of different payment types, it would be helpful to understand whether consumers do, in fact, “lose control” and change their spending habits when they switch to new payment methods.

Empirically estimating the effect of payment method on behavior is difficult because payment method is generally endogenous; more educated, higher-income consumers with greater financial knowledge are more likely to use electronic payments and choice of payment type may depend in part on liquidity constraints or on factors that affect prices such as reward incentives offered by credit card companies. This paper exploits an exogenous source of variation in payment method: the government’s use of income withholding to collect child support. While most child support payments were once made directly from the noncustodial parent to the child’s guardian, now the majority of child support payments are withheld from noncustodial parents’ pay. This change in payment method is the result of state child support enforcement laws that were implemented during the 1980s and 1990s and required automatic child support withholding in all child support cases. Child support withholding is an interesting source of variation in payment method for several reasons. Income withholding payment methods are likely to be similar to automatic bill pay in the degree to which individuals are conscious of possessing, and losing, the money. Since (for fathers who paid full child support in the absence of enforcement) the law changes affect only the method of payment, not the amount, the results can be interpreted as responses to payment method.

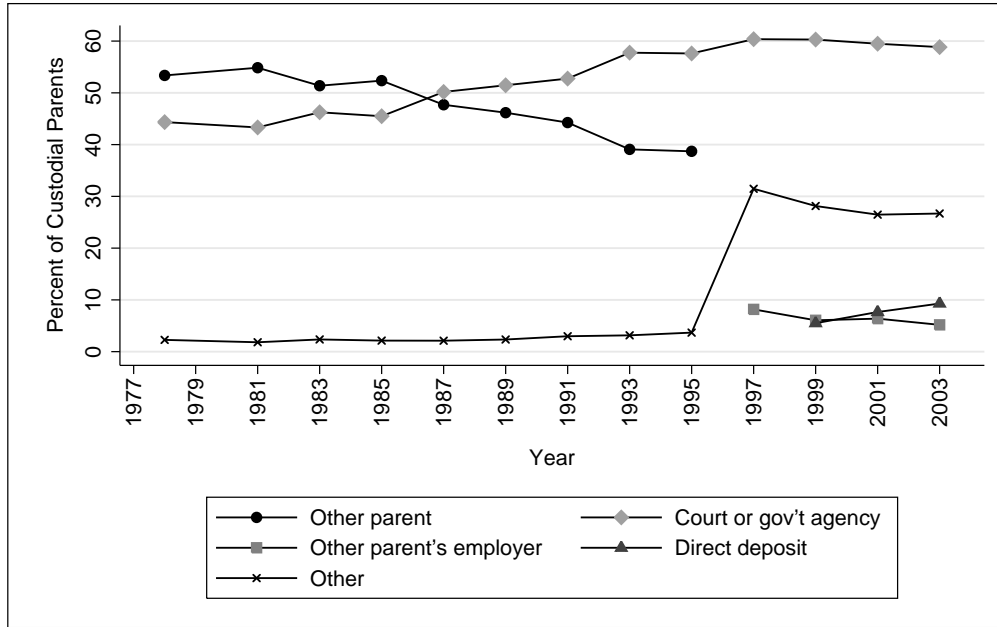
I first develop a standard model of child support in which fathers decide how much support to pay and how much time to spend with their children: in this model, payment method does not affect parents’ optimal choice of support amount or child contact when the size of the child support obligation is held constant. In contrast, research in psychology and economics offers several reasons that payment method may not be neutral. Payment method may affect the “mental account” from which agents draw their consumption (Prelec and Loewenstein 1998, Thaler 1999). It may affect the salience, or visibility, of payment, or consumers’ awareness of their account balances. I contribute to the literature by developing two variations on salience models in which different payment types may affect either the salience (or visibility) of payment or the salience of the child’s consumption. In these models, salience in turn affects optimal choices of in-kind support and contact. Another psychological explanation for how automatic payments may affect behavior is that withholding,

by providing external motivation to pay support, may erode fathers' intrinsic motivation to meet responsibilities toward their children. I discuss the literature on intrinsic motivation in relation to child support withholding. Last, family bargaining models provide another reason we might expect child support payment method to affect behavior. Changing to withholding as the default payment method may alter the power relationship between fathers and mothers who negotiate over support paid and the amount of time each parent spends with the child. I discuss the impact of withholding in a model developed by Del Boca and Ribero (2001, 2003), in which fathers choose the amount of support to pay and mothers choose how much income to use for children's consumption and how children's time is allocated between fathers and mothers.

To test whether payment method affects behavior, I use six years of data from the Current Population Survey Child Support Supplement to examine the relationship between child support payment method and two outcomes: parent-child contact and parents' contributions to five categories of in-kind or additional support. I instrument for withholding using within-state variation in the timing of child support orders around withholding laws and the variation in implementation of withholding over states and time. The instrumental variables results show that, for parents who are not in arrears, parents subject to withholding have significantly less contact with their children and are less likely to provide additional support. These results are inconsistent with a standard model of child support in which payment method is neutral.

To discriminate between the possible explanations discussed above for why payment method may affect behavior, I explore which cases contribute most heavily to the IV estimates using techniques developed by Card (1995) and Kling (2001). The instrumental variables estimates place greatest weight on cases in which the custodial mother is more highly educated, more likely to be employed, and has higher family income, and the father has legal visit privileges. In short, the IV estimates place greatest weight on cases that were least likely to be affected by withholding for enforcement reasons. As these factors are likely to be correlated with beneficial father involvement, these cases should be least likely to be affected if parental bargaining were the primary explanation for how payment method affects parent-child contact. In addition, I examine how the schedule on which parents are required to pay support affects parent-child contact. Parents who pay their support on a more frequent basis, *ceteris paribus*, spend more time with their children, which is consistent with payment triggering increased salience of parental responsibilities. While multiple factors may determine the effect of payment method on parent-child contact and the provision of in-kind support, the results are consistent with a salience model in which child support payment method affects not only the salience of payment but the salience of children's consumption.

Figure 1: Methods by Which Custodial Parents Report Receiving Child Support Payments, 1979-2004 CPS Data



The paper proceeds as follows. Section 2 describes the policy environment surrounding introduction of income withholding for child support enforcement. Section 3 presents a standard model of parents' choice of support levels and child contact under child support enforcement, develops two salience models in which either salience of payment or salience of child's consumption impact choice, and discusses intrinsic motivation and parental bargaining models. Section 4 discusses the implications of the models for empirical work and Section 5 presents the data and methodology used to evaluate the effects of withholding on parent-child contact and in-kind support. Section 6 discusses the results and sensitivity tests. Section 7 concludes.

2 A History of Child Support Withholding Policies

Prior to implementation of wage withholding, noncustodial parents made child support payments by check or similar payment either to the custodial parent or to a state agency such as a court or welfare office. The Current Population Survey Child Support Supplement collects data about the route by which custodial parents receive child support payments, as shown in Figure 1. Until 1985, more than half of child support recipients reported receiving child support payments directly from the noncustodial parent, while around 45 percent of parents received child support through a child support or welfare agency or through the court. Child support payments passed through welfare agencies when the custodial parent received wel-

fare because states retained the majority of child support payments in welfare cases to offset welfare expenditures. Also, noncustodial parents often paid through courts or child support agencies in order to document payment history.

In the late 1980s the proportion of custodial parents who receive child support directly from the noncustodial parent began to decline. This was largely due to enactment of federal and state laws requiring income withholding of child support. Withholding laws had two main purposes. First, they were intended to improve child welfare by increasing child support collections and raising children's standard of living. Second, states hoped that withholding would offset welfare expenditures by improving child support collections from obligors in cases where the custodial parent received Aid to Families with Dependent Children. The federal Child Support Enforcement Amendments of 1984 required states to withhold the wages of noncustodial parents who fell more than one month behind in their child support payments. By 1987, all states had passed wage withholding laws for delinquent parents (Huang, Kunz and Garfinkel 2002). The federal Family Support Act of 1988 required states to implement withholding for all welfare cases by 1990 and for all child support orders, regardless of payment history or welfare status, by 1994. By 1990, 48 states and the District of Columbia had passed laws requiring withholding in welfare cases. Forty-five states and the District of Columbia had laws requiring withholding in all cases by the 1994 deadline: these laws are referred to in the literature as universal withholding laws. The only legal exceptions to withholding are for good cause (especially if the custodial parent fears violence if a withholding order is issued) or (in some states) when parents mutually agree on alternative arrangements.¹ These universal withholding laws changed the default payment method for fathers who paid full child support and were not subject to other forms of enforcement. Because withholding laws were not retroactive and applied only to child support orders issued or modified after the passage of the law, they did not change the payment method in individual cases, but they do provide exogenous variation in the distribution of payment method.

Figure 1 and Table 1 provide evidence that implementation of these laws was effective and did alter payment methods. The fraction of child support payments received directly from the noncustodial parent declined to 38.7 percent in 1995, after which the survey question was revised and this answer option was eliminated. The trends shown in Figure 1 suggests that the majority of responses in the "Other" category after 1995 correspond to payments received directly from the noncustodial parent, and these responses decline steadily as the fraction of child support cases subject to withholding laws increased with time. Beginning

¹See Huang et al.'s (2002) Appendix Table 1 for the dates that wage, immediate, and universal withholding laws were passed by state.

Table 1: Percent of Custodial Parents Who Report That Child Support Payments Are “Supposed to Be” Deducted from Paycheck, 1994-2004 CPS Data

1993	1995	1997	1999	2001	2003
37.01	39.82	42.73	44.45	49.87	49.54

with the 1994 CPS, custodial parents were also asked whether child support payments were deducted from the noncustodial parent’s paycheck. Table 1 shows that the percentage of parents with child support cases with withholding increased steadily from 37 percent in 1993 until leveling off at about 50 percent between 2001 and 2003.²

Implementation of the withholding laws appears to vary greatly across states for both the enforcement-oriented early withholding laws and the universal withholding laws. The first column of Table 2 indicates withholding rates by state for the subsample of CPS respondents who report that the custodial parent received welfare or the noncustodial parent was in arrears. The second column shows withholding rates for the subsample not subject to enforcement-oriented withholding for arrears or AFDC status, but who are eligible for withholding based on the universal withholding laws that applied to all cases. The third column shows withholding rates for the subsample who are not subject to either type of withholding law based on observable characteristics.³ Generally, withholding is highest for cases subject to withholding for enforcement reasons. Judges are least likely to grant exemptions in these cases and enforcement agencies have the strongest incentives to pursue withholding for this sample. Withholding for cases subject to universal withholding laws is, however, significantly higher than withholding for cases not subject to these laws in almost all the states, again suggesting that the laws had real effects on practice. The variation across states likely reflects the large differences automation and capacity in state child support offices and courts.

Withholding orders are issued by courts or child support agencies and sent to noncustodial parents’ employers. All employers are required to comply with the order and withhold the

²In fact, the survey asks whether payments were “supposed to be” deducted from the noncustodial parent’s paycheck. The “supposed to” language is used throughout the survey to ask custodial parents about the legal requirements of the support order regardless of whether any support was actually received. Consequently, I believe the correct interpretation of the question is whether the custodial parent believes that a court or government agency issued a current withholding order to the noncustodial parent’s employer, and I use this measure throughout the paper as my measure of payment method.

³Withholding laws may apply to cases in the third column if the noncustodial parent owed back support or the custodial parent was on welfare in the past. The CPS reports only current arrears and welfare status. We cannot tell from the data why some eligible parents do not have withholding orders. They may be self-employed, unemployed, or actively evading child support enforcement; a judge may have chosen to make an exception for good cause; or the custodial parent may simply have poor information about how child support is paid.

Table 2: Rates of Withholding By State, for Cases Subject to Prior Withholding Laws, Universal Withholding Laws, and No Withholding Laws

	Percent of Cases				Percent of Cases			
	Subject Under Prior Law		Subject Under Universal Law Only		Subject Under Prior Law		Subject Under Universal Law Only	
	Subject Under Prior Law	Subject Under Universal Law Only	Subject Under Prior Law	Subject Under Universal Law Only	Subject Under Prior Law	Subject Under Universal Law Only	Subject Under Universal Law Only	Subject Under Universal Law Only
Alabama	58.6	44.9	39.2	39.2	62.2	43.9	43.9	7.5
Alaska	65.7	52.3	26.8	26.8	61.6	43.0	43.0	22.7
Arizona	63.1	66.5	17.1	17.1	46.5	29.5	29.5	14.4
Arkansas	51.4	45.5	13.6	13.6	50.8	33.3	33.3	25.4
California	57.5	35.4	20.5	20.5	62.7	32.5	32.5	15.0
Colorado	46.1	24.4	19.6	19.6	36.8	36.8	36.8	5.6
Connecticut	59.9	16.9	0.0	0.0	58.5	42.6	42.6	32.3
Delaware	79.0	47.8	45.9	45.9	52.5	37.4	37.4	32.9
District of Columbia	53.0	17.9	69.3	69.3	66.0	62.2	62.2	4.2
Florida	49.7	37.2	12.6	12.6	72.0	70.7	70.7	61.0
Georgia	43.7	36.7	23.3	23.3	41.9	38.8	38.8	20.7
Hawaii	59.2	61.7	0.0	0.0	63.1	37.4	37.4	16.3
Idaho	55.3	34.3	18.8	18.8	75.2	56.3	56.3	28.6
Illinois	47.2	45.2	28.1	28.1	47.5	36.4	36.4	10.1
Indiana	46.9	37.3	24.4	24.4	48.0	37.5	37.5	31.6
Iowa	81.9	68.2	23.1	23.1	59.5	39.0	39.0	27.2
Kansas	60.9	45.9	7.8	7.8	62.4	29.2	29.2	35.6
Kentucky	50.2	37.1	22.0	22.0	62.4	61.9	61.9	43.1
Louisiana	37.0	24.9	15.4	15.4	56.2	20.1	20.1	17.0
Maine	79.0	33.2	28.9	28.9	74.3	37.8	37.8	18.0
Maryland	55.5	33.4	33.4	33.4	33.2	35.6	35.6	29.8
Massachusetts	55.9	48.7	35.9	35.9	66.0	32.9	32.9	26.4
Michigan	65.4	69.1	49.9	49.9	56.4	50.5	50.5	28.4
Minnesota	69.2	61.8	23.7	23.7	65.8	72.1	72.1	64.4
Mississippi	64.8	29.2	26.1	26.1	54.2	42.1	42.1	23.5
Missouri	61.6	28.6	33.5	33.5	58.6	44.6	44.6	31.3

full required amount. Withholding may be less than the the full child support obligation if income is low; state rules limit the percentage of income that may be garnished from pay. Withholding may also be higher than expected based on the monthly child support obligation if the father is in arrears. Child support receives first priority among wage garnishments with the exception of federal IRS tax levies. In some states, employers may charge employees a fee to process child support withholding on their behalf. Employers may not refuse to hire or terminate employees because of child support withholding requirements.

2.1 The Effectiveness of Withholding as an Enforcement Tool

Existing research on the the effects of child support withholding focuses on its enforcement aspects. Withholding is generally considered to be one of the most effective child support enforcement tools available to state governments. Sorensen and Hill (2004) find that previously married mothers were 4.2 percent more likely to receive support after universal wage withholding was implemented in their state, although they find no effect for never-married mothers. Case, Lin and McLanahan (2003) find that universal withholding is associated with average annual child support payments that are higher by \$187 for ever married mothers.

In spite of their effectiveness, the implementation of withholding laws remains problematic. Especially before widespread automation, state agencies had difficulty tracking down noncustodial parents and issuing withholding orders in a timely manner: delinquent parents often left jobs before the authorities could catch up with them. Large caseloads also slowed implementation. Gordon (1994) used administrative data from 1990 on child support cases and survey responses from child support enforcement offices to study the implementation of wage and immediate withholding and found that in cases with arrears due (and therefore subject to wage withholding) enforcement offices attempted withholding in 71 percent of AFDC cases overall and 81 percent of AFDC cases in the past year. Of AFDC cases, 45 percent actually had withholding at the time of the survey and 63 percent of non-AFDC cases had withholding. However, for cases in which the case file did not have information about withholding, the office attempted withholding in only 33 percent of AFDC cases and 26 percent of non-AFDC cases. Gordon concluded that although a large part of the difficulty in establishing withholding orders is unemployment spells or inability to locate parents, poor administrative organization is also to blame. In 1990, only a small minority of child support enforcement offices had automated systems and many offices required caseworkers to check obligors' employment status manually on a monthly basis. Orders were also initiated and enforced by different agencies in many cases, so poor interagency communication contributed to poor implementation. Studies by Case et al. (2003) and Sorensen and Hill (2004) indicate

that enforcement and withholding automation have improved significantly, although these studies do not use administrative data.

3 Theoretical Models of Payment Methods

Although the universal withholding laws changed only the default payment method and did not change withholding in individual cases, modeling the effect of a change in payment method on individual behavior provides guidance for how we would expect parents' behavior to differ by payment type. First, I develop a standard model of child support enforcement and parents' decisions about the amount of support to pay and the amount of time to spend with their child.

3.1 A Standard Model

Consider a simple model of child support payments in which fathers decide how much time and money to spend on their child. Fathers care about their own consumption (Y_P) and that of their child (Y_C), own leisure (L_P), and time spent with their child (L_C). I assume that $U(Y_P, Y_C, L_P, L_C)$ is twice continuously differentiable, concave, and increasing in each parameter.

In order to evade child support withholding, fathers must choose an employer who is willing to disobey state law and ignore a court order or agency order requiring income withholding. In the model, this is represented as a choice between two sectors of the labor market: fathers choose whether to work in the formal sector or informal sector. For simplicity, I assume labor is supplied inelastically conditional on sectoral choice, so that fathers choose between a bundle (W_F, H_F) or (W_I, H_I) , where W_F and W_I are after-tax incomes in each sector and H_F and H_I are total hours of leisure available in those sectors.⁴ In addition to choosing their sector, fathers choose how much child support to pay and how much time L_C to spend with their child. Since H_F and H_I need not be the same, the total amount of time that fathers may divide between their own leisure L_P and time with their child L_C varies with sectoral choice.

The government requires fathers to pay a minimum level of child support \bar{S} . If a father pays support S such that $S < \bar{S}$, he faces a penalty if his evasion is detected. I use a certainty-equivalent cost function $C(\bar{S} - S)$ that is the certainty value of the increased risk borne by the father, where $C' > 0$, $C'' > 0$ and $C(S) = 0$ if $S \geq \bar{S}$. The assumption that

⁴In the US, child support payments are not tax-deductible and child support receipts are not taxed as income.

$C'' > 0$ reflects the increasing penalties and enforcement mechanisms fathers face as child support evasion increases. Fathers may also pay support above \bar{S} .

Children's consumption Y_C is a function of the total amount of support S that fathers pay and mother's income Y_M , where $Y_C = Y_C(S + Y_M)$ and $Y'_C > 0$. The second derivative, Y''_C , depends on the mother's propensity to spend money on the child as income increases; I assume $Y''_C \leq 0$. In this standard model, payment method has no direct effect on behavior. Fathers whose optimal child support payment amount is not affected by the introduction of withholding do not alter the amount of time they spend with their children.

3.1.1 Prior to Implementation of Withholding

Before implementation of withholding, fathers simply choose the sector in which their utility is highest: if the costs of evasion are the same in both sectors and both after-tax income and total leisure is higher in sector j , fathers will always choose sector j . If there is a trade-off between income and hours between the formal sector (F) and the informal sector (I), sectoral choice will depend on preferences. More likely, the costs of evasion will differ across sectors due to different probabilities of detection or different penalties if caught, since detection of informal work may also trigger tax consequences. Fathers choose their sector in two steps: they optimize in each sector and then choose the sector that gives highest utility $U = \operatorname{argmax}_{j \in F, I} U(S_j^*, L_{Cj}^*)$ subject to the budget constraint and time constraint in each sector. Fathers who work in sector j solve

$$\begin{aligned} \max_{S, L_C} U(Y_P, Y_C, L_P, L_C) \text{ subject to} \\ Y_P = W_j - S - C(\bar{S} - S) \\ Y_C = Y_C(S + \bar{Y}_M) \\ H_j = L_P + L_C \\ S, L_C \geq 0 \end{aligned} \tag{1}$$

where W_j is after-tax income in sector j .

This yields the following first-order conditions:

$$-U_1(1 - C') + U_2 Y'_C = 0 \tag{2}$$

$$-U_3 + U_4 = 0 \tag{3}$$

Equation (2) requires that at the optimum the marginal benefit from another dollar spent on the father's own consumption should equal the marginal benefit from another dollar spent on child support. If the father pays less than full support and incurs costs, the marginal rate of

substitution between father's consumption and time spent with the child equal $Y'_C/(1 - C')$, the relative cost of another unit of child's consumption in units of own consumption. If the father pays $S \geq \bar{S}$, he sets the marginal rate of substitution equal to the child's marginal consumption Y'_C . Equation (3) simply states that the marginal utility of leisure should equal the marginal utility of time the father spends with his child.

The case in which $S^* > \bar{S}$ represents fathers who willingly pay their full mandated child support. For these fathers, an increase in the mandatory level of support \bar{S} has no effect on S^* and L_C^* . For fathers who pay less than the required amount of support ($S^* < \bar{S}$), an increase in the mandated amount of support \bar{S} increases the cost of evasion C and effectively lowers income. Formally,

$$\frac{\partial S^*}{\partial \bar{S}} = -C' \frac{\partial S^*}{\partial W_j} - \frac{U_1 C'' \frac{\partial^2 U}{\partial L_C^2}}{D_{Standard, S^* < \bar{S}}}, \quad (4)$$

where D is the determinant of the matrix of second derivatives of the utility function. The first term of this expression illustrates the negative income effect of an increase in mandatory support. The increase in \bar{S} raises the cost of not fully complying with the child support order and has a negative effect on the father's income. If Y_C is a normal good, so that $\frac{\partial S}{\partial W_j} > 0$, this causes them to decrease support S . The magnitude of this effect depends on the steepness of the cost function. However, increasing \bar{S} also makes own consumption more costly relative to child's consumption: the second term illustrates that an increase in \bar{S} also increases the costs of evasion when the cost function is convex.⁵ When $C'' > 0$, the second term of the comparative static expression is positive and, depending on the relative magnitudes of the two terms, an increase in mandatory support \bar{S} can increase support paid.

The comparative static result for the effect of an increase in mandatory withholding on parent-child contact L_C ,

$$\frac{\partial L_C^*}{\partial \bar{S}} = -\frac{\partial L_C^*}{\partial W_j} + \frac{U_1 C'' \frac{\partial^2 U}{\partial S \partial L_C}}{D_{Standard, S^* < \bar{S}}}, \quad (5)$$

cannot be signed without additional assumptions about the signs of $\frac{\partial L_C}{\partial W_j}$ and $\frac{\partial^2 U}{\partial S \partial L_C}$. The effect of an increase in mandatory support on the time fathers spend with their children is more likely to be positive if S and L_C are complements so $\frac{\partial^2 U}{\partial S \partial L_C} > 0$.

3.1.2 After Implementation of Withholding

If the government implements child support withholding, it can collect full support \bar{S} from all fathers working in the formal sector: in the model, this can be represented by adding

⁵The concavity assumption ensures that $\left(\frac{\partial^2 U}{\partial L_C^2} / D_{Standard, S^* < \bar{S}}\right) < 0$.

an additional constraint $S \geq \bar{S}$. Because these fathers are forced to pay full support, there are no costs associated with evasion, so $C(S) = 0$. For fathers who paid full support prior to implementation of withholding, the policy change has no effect: they face the same constraints as before the policy change.

Fathers who worked in the formal sector but paid less than full support are faced with an income shock. If $(U_F^*|S = \bar{S}) < U_I^*(S^*, L_C^*)$, fathers are now better off switching from the formal to the informal sector; for these fathers, we cannot identify how the time L_C^* they spend with their child will change. For fathers who remain in the formal sector, S^* increases automatically. There is no change in the time constraint, but L_C^* is likely to change as well depending in part on complementarity between Y_P , Y_C , L_P , and L_C . The direction of change cannot be signed without further assumptions.

This standard model of child support payment generates the usual results: implementing withholding has no effect on behavior for individuals whose payment amount does not change.

3.2 Saliency and Payment Method

The model developed above presumes that child support payments affect father's decisions about how much support to provide identically regardless of how those payments are made. However, a growing body of research suggests that payment method affects individuals' consumption decisions. Much of the existing work focuses on credit cards. Hirschman (1979) finds that individuals with bank credit cards or store cards are more likely to make purchases and to spend more than individuals without credit cards. More recently, Prelec and Simester (2001) find that individuals have higher willingness to pay for sports tickets when they are instructed to pay with credit cards than when told to pay in cash in an experimental setting, and present evidence that liquidity constraints do not fully explain the results. Soman (2003) reports that college students spend more on photocopying when given a prepaid copy card than when given cash. Several papers examine the impact on behavior of automatic payments for obligations to government. Finkelstein (2007) examines the effect of electronic toll collection systems and finds suggestive evidence that introduction of electronic toll collection decreases the short-run elasticity of driving by 10 percent. Feldman (2004) finds that decreases in tax refunds due to lower income tax withholding decreased the probability that households contributed to an IRA even though tax liability did not change.

Saliency, or visibility, is one mechanism through which payment method may affect behavior. Payment method may determine the saliency of the payment and affect the way in which individuals weigh costs against benefits when making consumption decisions. Prelec and Loewenstein (1998) and Thaler (1999) argue that payment methods affect consumption

by manipulating the strength of the link between payment and specific consumption acts. For example, credit cards decouple payment and consumption by separating the timing of paying a credit card bill from the timing of acquisition and by aggregating payments for multiple consumption decisions on one bill. Payment methods that link payment more closely to consumption reduce the pleasure associated with consumption and lead to fewer purchases relative to payment methods in which payment and consumption are tied less closely

Recent tests of the effect of salience on consumer behavior indicate that individuals are more responsive to relatively salient prices. Chetty, Looney and Kroft (2007) test the effect of salience of purchase costs on consumption decisions using an experiment in which tax-inclusive prices were posted in a supermarket for some goods. Purchases of the goods for which tax-inclusive prices were posted decreased relative to purchases for goods without tax-inclusive price labels by approximately 8 percent. Liebman and Zeckhauser (2004) argue that because in most cases average tax rates are more salient, or better understood by and more visible to, taxpayers than marginal tax rates, we should expect behavior to change in response to average rather than marginal rates. Feldman and Katusčák (2006) use changes in the child tax credit, which changed average but not marginal tax rates for some taxpayers, to test this hypothesis. They find that labor supply decreases for individuals who lose eligibility for the child tax credit, consistent with models in which individuals respond to the average rather than marginal tax rate.

This research suggests that shifting to automatic withholding of child support payments may alter noncustodial parents' behavior. Automatic withholding shifts responsibility for payment from the noncustodial parent to the parent's employer and separates payment from contact with the child or the custodial parent. When support payments occur automatically, the payments are less salient and noncustodial fathers receive fewer reminders of their obligations toward their children.

In modeling salience of child support, it is unclear whether the change in payment mechanism affects only the salience of payment or whether, in the case of child support, it also affects the salience of child's consumption. With weaker reminders about child support obligations, fathers may receive less utility from meeting those obligations and contributing to their children's wellbeing. If so, withholding affects the degree to which thoughts of the child affect the father's utility by changing the salience of the child's consumption.

A simple way to incorporate salience into the model presented above is to add a multiplicative salience parameter σ that affects the impact of support S , where $\sigma = 1$ corresponds to full awareness of payment, as with direct cash payment, and $0 < \sigma \leq 1$ indicates less-than-complete salience. If the change to withholding affects the salience of payment only, I consider $U(Y_P, \hat{Y}_C(\sigma S + \bar{Y}_M), L_P, L_C)$. In the case in which payment method affects the

salience of child's consumption, I am interested in $U(Y_P, \sigma Y_C, L_P, L_C)$. If we assume all of child support payments are withheld (i.e., if the father wants to pay $S > \bar{S}$ he requests larger withholding), then these two options result in identical comparative static results. If any additional support the father provides is paid directly by the father, the implications are slightly different. Consequently, I will treat $S = \bar{S}$ as formal child support paid via withholding and A as additional support paid directly to the custodial mother. If withholding affects only the salience of payment (and not the child's consumption), I examine $U(Y_P, \hat{Y}_C(\sigma \bar{S} + A + \bar{Y}_M), L_P, L_C)$

This method of modeling salience differs from that used in recent work by Chetty et al. (2007). They examine purchasing decisions among consumers for whom salience is effectively optional: agents know sales tax rates but must incur a computational cost to calculate after-tax prices. Agents choose whether to compute true prices and incur the costs or to maximize with respect to inaccurate prices. Their salience costs enter through the budget constraint rather than the utility function. Since they assume computation costs are constant, agents are more likely to incur the costs for larger purchases. In my model in which the salience parameter enters multiplicatively, salience produces larger distortions at higher levels of child support payment since agents receive less utility from high child support payments when payments are less salient.

3.2.1 Salience Model I: Salience of Mandatory Payment \bar{S}

If only mandatory child support payments are withheld and withholding changes only the salience of the withheld child support payments \bar{S} (and not the child's consumption), then fathers in the formal sector who pay at least full support ($S + A > \bar{S}$) face the following problem:

$$\max_{A, L_C} U(W_F - \bar{S} - A, Y_C(\sigma \bar{S} + A + \bar{Y}_M), H_F - L_C, L_C). \quad (6)$$

I consider only parents who work in the formal sector before and after withholding. I assume that, for these parents, switching to child support withholding reduces σ ; that is, I assume that withholding makes the child support payment less visible. I focus on fathers who paid full support prior to withholding because withholding changes both payment method and amount (and possibly sectoral choice) for fathers who do not pay full support without withholding enforcement.⁶

Changes in the level of mandated support no longer correspond to a one-for-one change in the level of total support ($\bar{S} + A$) because fathers are fully cognizant of the change in

⁶If fathers who paid less than full support resent the child support system, additional enforcement such as withholding could increase salience if it also increases their resentment.

mandatory support on their own consumption but not fully aware of the effect of the change on their child's consumption.⁷ Because of this,

$$\frac{\partial A^*}{\partial \bar{S}} = -\frac{\partial A^*}{\partial W_F} + \sigma \frac{\partial A^*}{\partial Y_M}.$$

When $\sigma = 1$, the model is identical to the standard model and $\frac{\partial A^*}{\partial \bar{S}} = -1$ (where a change in the amount of required support \bar{S} is exactly offset by a change in the amount of additional support, and total support S remains unchanged). This effect has two components: a one-unit increase in required support reduces the father's discretionary income by one unit, so there is a negative income effect $\frac{\partial A^*}{\partial W_F}$. It also automatically increases the amount of support the child receives, which has the same negative income effect as an additional dollar of mother's income, $\frac{\partial A^*}{\partial Y_M}$.⁸ If we assume that Y_C is normal but not superior, $0 < \frac{\partial A^*}{\partial W_F} < 1$ and $-1 < \frac{\partial A^*}{\partial Y_M} < 0$.⁹ Then

$$-1 < \frac{\partial A^*}{\partial \bar{S}} < 0. \quad (7)$$

Unlike the standard model, A and \bar{S} are not one-for-one substitutes because the father perceives the two payments differently. Both decrease his own consumption Y_P , but A has a stronger marginal effect on his perception of his child's consumption, and a smaller increase in A is needed to offset a decrease in \bar{S} . As for time spent with the child,

$$\frac{\partial L_C^*}{\partial \bar{S}} = -\frac{\partial L_C^*}{\partial W_F} + \sigma \frac{\partial L_C^*}{\partial Y_M}, \quad (8)$$

which is negative when $\frac{\partial L_C^*}{\partial W_F} > 0$ and positive otherwise. Since an increase in W_F does not relax the time constraint, standard assumptions about normality do not allow us to sign $\frac{\partial L_C^*}{\partial W_F}$.

Our main area of interest, however, is the change in A^* and L_C^* when σ changes. The comparative static results are

$$\frac{\partial A^*}{\partial \sigma} = \bar{S} \frac{\partial A^*}{\partial Y_M} \quad (9)$$

and

$$\frac{\partial L_C^*}{\partial \sigma} = \bar{S} \frac{\partial L_C^*}{\partial Y_M}, \quad (10)$$

⁷Modeling fathers as fully aware of the effect of child support on their consumption, rather than using $Y_P = W_F - \sigma \bar{S} - A$, reflects the fact that fathers' take-home pay is net of child support payments under income withholding.

⁸If mothers are more likely to spend additional child support dollars to benefit the child than additional dollars of their own income, this will not hold.

⁹The assumption that Y_C is normal but not superior simply implies that another dollar of income will increase expenditures on child's consumption by a positive amount less than \$1. This allows both Y_P and Y_C to be normal.

where $\frac{\partial A^*}{\partial \sigma} < 0$ if the child's consumption is a normal good for the father. An increase in salience has a negative income effect on additional support A because it makes fathers more aware of the support they are paying formally and increases their perceived value of the child's consumption.¹⁰ Consequently, fathers will substitute toward own consumption. The sign of $\frac{\partial L_C^*}{\partial \sigma}$ depends on the sign of $\frac{\partial L_C^*}{\partial W_F}$. Since an increase in the father's income does not affect the time constraint and salience acts like an increase in the father's income, and increase in salience has ambiguous effects on how much time the father will choose to spend with the child.

The implications of these comparative static results for the empirical estimates are that, among fathers who would pay full mandatory support with or without enforcement, we should expect more support above the mandatory amount from fathers with withholding than those without and that we should expect a nonzero response in the number of visits. If we believe that, even if the time constraint is not relaxed, fathers spend more time with their children when their income is higher, i.e., that $\frac{\partial L_C^*}{\partial W_F} > 0$, this salience model also predicts that fathers whose payments are less salient will spend less time with their children.

3.2.2 Salience Model II: Salience of Child's Consumption Y_C

If withholding changes the salience of the child's consumption instead of only the salience of the formal payment, then fathers in the formal sector who pay full support solve

$$\max_{A, L_C} U(W_F - \bar{S} - A, \sigma Y_C(\bar{S} + A + \bar{Y}_M), H_F - L_C, L_C).$$

For fathers who pay full mandatory support \bar{S} and choose $A^* > 0$ the first order condition with respect to A becomes

$$-U_1 + \sigma Y_C' U_2 = 0. \quad (11)$$

As in equation (2), this states that the marginal benefit from another dollar spent on own consumption should equal the marginal benefit from another dollar spent on the child's consumption at the optimum. When salience σ is low, the marginal benefit from additional spending on child's consumption is low, and we would expect an increase in salience to lead to an increase in A : we might expect $\frac{\partial A^*}{\partial \sigma} > 0$. However, the comparative static results illustrate that the effect of a change in salience is more complicated:

$$\frac{\partial A^*}{\partial \sigma} = \frac{\partial A^*}{\partial Y_M} \frac{Y_C}{\sigma Y_C'} + \left(\frac{Y_C'' Y_C}{Y_C'} - Y_C' \right) \frac{U_2 \frac{\partial^2 U}{\partial L_C^2}}{D_{Salience II, A^* > 0}} \quad (12)$$

¹⁰ $\frac{\partial A^*}{\partial Y_M} < 0$ is the income effect on father's support, due to the mother contributing additional support.

and

$$\frac{\partial L_C^*}{\partial \sigma} = \frac{\partial L_C^*}{\partial W_F} \frac{Y_C}{\sigma Y_C'} + \left(Y_C' - \frac{Y_C'' Y_C}{Y_C'} \right) \frac{U_2 \frac{\partial^2 U}{\partial A \partial L_C^*}}{D_{\text{Salience II}, A^* > 0}}. \quad (13)$$

The first term of Equation (12) is negative under the assumption that Y_C is normal but not superior and large in magnitude when σ is low. Intuitively, an increase in salience acts like an exogenous increase in other resources available to the child and allows fathers to substitute away from providing support A . The second term is positive and corresponds to intuitive expectations that an increase in salience will increase additional support because that support is now more valuable at the margin: the concavity assumptions on utility ensure that $(\frac{\partial^2 U}{\partial L_C^2} / D_{\text{Salience II}, A^* > 0}) < 0$. Consequently, the sign of $\frac{\partial A^*}{\partial \sigma}$ depends on the comparative magnitude of these two effects, but unlike the standard model and Salience Model I, it is consistent with the intuitive result that when the child's consumption is less salient, fathers contribute less to their child's support.

As with other comparative statics involving L_C , the effect of an increase in salience on father-child contact, $\frac{\partial L_C^*}{\partial \sigma}$, depends partly on the sign of $\frac{\partial L_C^*}{\partial W_F}$. Since an increase in a father's after-tax wage earnings, W_F , does not relax the time constraint, the sign of $\frac{\partial L_C^*}{\partial \sigma}$ is indeterminant. However, if we assume $\frac{\partial L_C^*}{\partial W_F} > 0$, then when A and L_C^* are complements, $\frac{\partial L_C^*}{\partial \sigma} > 0$.¹¹ As with the standard model, changes in mandated levels of support do not affect optimal choices of total support or time spent with the child ($\frac{\partial A}{\partial \bar{S}} = -1$ and $\frac{\partial L_C}{\partial \bar{S}} = 0$). Because the salience parameter affects the salience of both \bar{S} and A , fathers treat these types of support as perfect substitutes.

Like Salience Model I, this model of the salience of child's consumption predicts that changes in child support payment method will alter the amount of time fathers spend with their noncustodial children and the amount of additional support they provide even when the amount of regular child support paid is held constant. Unlike the first model that examines salience of payment, Salience Model II is consistent with a decline in both visits and in-kind support when fathers switch to less salient payment methods.

3.3 Alternative Mechanisms for Payment Method Non-Neutrality: Intrinsic Motivation

The models above assume that salience is the mechanism through which payment method affects behavior. Another possible means by which withholding may affect behavior is by altering fathers' intrinsic motivation to spend time with their children. Frey (1997) argues that external rewards or enforcement mechanisms can crowd out intrinsic motivation to

¹¹ $\frac{\partial^2 U}{\partial A \partial L_C} > 0$ if A and L_C are Edgeworth complements.

engage in altruistic or socially desirable behavior.¹² The intrinsic motivation argument is based on evidence from psychological experiments that indicate that rewards may decrease motivation under certain conditions. In a classic study, Lepper, Greene and Nisbett (1973) found that by rewarding students with a certificate for drawing, students were less inclined to draw in future without promise of a certificate. Psychologists Deci, Koestner and Ryan (1999) conduct a meta-analysis and review nearly thirty years of similar studies on rewards and intrinsic motivation. They conclude that when a task is intrinsically interesting, external rewards reduce the degree to which individuals take responsibility for their own actions and lead to less of the rewarded behavior. In accord with this research, Frey (1997) claims crowd-out of intrinsic motivation is most likely if: (1) the relationship is more personal; (2) the task is intrinsically interesting; (3) the agent has more room for participation and decision-making; and (4) when the external intervention is uniform across agents. These guidelines suggest that child support enforcement is a likely case for crowd-out. Child support and family relationships are personal and generally self directed, and child support courts and enforcement agencies strive to apply laws uniformly.

There is evidence that both payers and recipients of child support resent government intervention even when they agree that fathers have an obligation to support their children, and this may support the intrinsic motivation story. Waller (2002) conducted interviews with a sample of low-income fathers and mothers in Trenton, New Jersey in the mid-1990s and reports that frequently both parents resent income withholding laws. Fathers in Waller's sample resent income withholding not only because they object to state requirements to pay support but because they generally prefer to make in-kind transfers rather than cash payments because their children understand tangible gifts more easily than paid child support. Furstenberg (1992) reports that fathers think that the state cares only about their monetary contributions and ignores other aspects of being a good father. Waller and Plotnick (2001) summarize other research with similar findings. Child support enforcement restricts the types of support fathers can provide and may lead to resentment and reduce fathers' inclinations to provide for their children.

One way to incorporate intrinsic motivation in a mathematical model is to reinterpret Saliency Model II above. Rather than representing saliency, σ could represent the degree of

¹²Economists have debated the plausibility of motivational crowd-out in the context of whether opening a market for blood would decrease altruistic blood donations (Titmuss 1971, Solow 1971, Arrow 1972). More recently, Bénabou and Tirole (2003) incorporate the idea of intrinsic motivation in a principal-agent model in which performance incentives can decrease an agent's effort. In empirical work, Frey and Oberholzer-Gee (1997) examine Swiss citizens' willingness to accept a nuclear waste site in their region when they are and are not offered monetary compensation: contrary to the predictions of standard economic theory, acceptance dropped significantly when monetary incentives were offered. Frey and Oberholzer-Gee interpret this as evidence that government payments reduced intrinsic motivation to contribute to the social good.

intrinsic motivation, or the extent to which fathers receive utility from increases in child's consumption. Since a switch from direct payment to withholding could decrease either salience or intrinsic motivation, the empirical tests presented below cannot distinguish between effects due to salience of the child's consumption or effects on intrinsic motivation. Additionally, the models are not mutually exclusive: both could operate simultaneously. Nevertheless, the empirical results below allow a comparison between the standard model and alternative behavioral explanations and allow us to distinguish between possible types of salience effects.

3.4 Alternative Mechanisms for Payment Method Non-Neutrality: Household Bargaining

Bargaining between parents over children's time may provide another explanation for responses to changes in the payment method. Withholding makes child support orders almost perfectly enforceable for men who work in regular jobs and who do not wish to change their work status. If men pay child support in exchange for access to their children, then withholding laws remove the father's power to exchange support for time. If mothers restrict access to their children to gain additional support from fathers, average visits would decrease after implementation of withholding. There is ethnographic evidence that mothers restrict fathers' access to children when fathers do not pay support but this is associated with other trust or conflict issues between parents (Furstenberg 1992, Johnson and Doolittle 1998, Waller and Plotnick 2001). Del Boca and Ribero (2001, 2003) develop this intuition in a model in which mothers and fathers are endowed with income $y_m < y_f$ and mothers are endowed with all rights to a child's time. Each parent i 's time spent with the child h_i is perfectly excludable: $h_m + h_f = 1$. The model predicts that fathers with higher income will pay more support and spend more time with their children and mothers with higher incomes will allow fewer visitations. In this framework, perfectly enforceable child support orders effectively transfer income endowments from the father to the mother and as a result the father will spend less time with the child.

Whether it makes sense to expect withholding to have large effects on visitation for household bargaining reasons depends to a large extent on how mothers feel about fathers' involvement. Del Boca and Ribero's model assumes that mothers (and children) do not benefit directly from father-child contact. If mothers believe that the child's involvement with the father is beneficial to the child or increases leisure time for the mother, the decline in visits due to a transfer of parental endowments from the father to the mother will be smaller than if the mother sees no benefit to father-child contact. This should be especially true for

Table 3: Summary of Model Predictions for Parents Who Pay Full Support

	Model		
	Standard	Saliency I	Saliency II
$\frac{\partial A^*}{\partial Y_M}$	$[-1, 0]$	$[-1, 0]$	$[-1, 0]$
$\frac{\partial A^*}{\partial \bar{S}}$	-1	$[-1, 0]$	-1
$\frac{\partial A^*}{\partial \sigma}$	NA	< 0	Cannot be signed
$\frac{\partial L_C^*}{\partial Y_M}$	> 0	> 0	> 0
$\frac{\partial L_C^*}{\partial \bar{S}}$	0	< 0	0
$\frac{\partial L_C^*}{\partial \sigma}$	NA	> 0	> 0

Assumptions: (1) fathers work in the formal sector and pay full support $S^* = \bar{S}$ regardless of withholding status; (2) Y_P and Y_C are both normal (which implies that $0 < \frac{\partial A}{\partial W_F} < 1$); (3) $\frac{\partial L_C}{\partial W_F} > 0$; and (4) A and L_C are complements: $\frac{\partial^2 U}{\partial A \partial L_C} > 0$.

fathers who have high-quality involvement with their children. If fathers who pay full support also provide additional payments or transfers beyond the required amount, bargaining over time with the child may take place over a different support level than that enforced by the child support order. Generally, bargaining models suggest that withholding should have a larger negative effect on father-child contact for lower-income (constrained) fathers and for fathers with lower-quality child involvement.

4 Implications for Empirical Work

Table 3 summarizes the comparative static results derived for the standard model and saliency models under the following assumptions: (1) fathers work in the formal sector; (2) the withholding constraint is not binding, so $S^* = (\bar{S} + A^*) > \bar{S}$ (3) own consumption Y_P and child's consumption Y_C are both normal (which implies that $0 < \frac{\partial A}{\partial W_F} < 1$); (4) the income effect on child's consumption is positive, so $\frac{\partial L_C}{\partial W_F} > 0$; and (5) child support $S = \bar{S} + A$ and time with the child L_C are complements: $\frac{\partial^2 U}{\partial A \partial L_C} > 0$. The assumption that $\frac{\partial L_C}{\partial W_F} > 0$

is reasonable if we relax the assumption that labor is supplied inelastically and consider an ordinary income effect: this assumes time spent with the child is a normal good.¹³ It is more difficult to decide whether A and L_C should be treated as complements or substitutes: some fathers may substitute presents and cash for time spent with the child. However, the child support literature generally indicates that support and time are complementary and visits increase with the amount of support paid. Explanations for the complementarity include that noncustodial parents may wish to monitor how the custodial parent spends their money or they may wish to monitor their child. For example, Aughinbaugh (2001) examines whether noncustodial parents use their children’s school performance as a measure of how well the custodial parent cares for the child and looks at whether they adjust their support payments in response to children’s performance. Alternatively, money and time spent with the child may be complements because custodial parents may restrict access to children unless child support is paid (Johnson and Doolittle 1998).¹⁴ The simplest explanation is that fathers who care more about their children care about both the child’s physical wellbeing and their relationship with the child.

Under these assumptions, the models above predict different effects of withholding on parent-child contact L_C and additional support A for parents whose amount of regular support payments is not affected by withholding. Further, among models that suggest an effect, they have predictions for which types of fathers should be most affected. I examine the effect of withholding on two types of outcomes: the number of days on which fathers and children had contact (my measure of L_C) and whether fathers paid for or provided food, clothing, medical care, child care, or gifts, which I treat as an indirect measure of additional support A . To reflect the fact that a change in payment method can also change payment amount for some fathers, I consider separate effects for fathers with different payment histories. Although income withholding was first used to enforce child support orders, the introduction of universal withholding laws means that withholding applies even for cases in which fathers willingly pay the full amount of mandatory child support. For these fathers, withholding changes only the payment method, not the fraction of required support that is paid. The comparative static results above primarily address this change. For other fathers, withholding changes both payment method and amount paid (and potentially the choice of regular or informal-sector work) as the enforcement aspect becomes important. This means that empirically we should look for separate effects depending on whether we believe fathers

¹³In this model, $\frac{\partial L_C}{\partial W_F}$ is a pure income effect. In a model with endogenous labor supply, the relevant comparison is a pure income effect in that model, not the wage effect (which will naturally have both an income and a substitution component).

¹⁴Although many child support orders establish visitation rights for noncustodial parents, custodial parents can often ignore these rules without penalty.

would have paid in the absence of withholding. This is a counterfactual we cannot observe; however, to proxy for it I use data on whether or not the father owes back support. I treat fathers who are not in arrears and do not owe any back support as fathers who would pay full support regardless of withholding status, and treat fathers who are in arrears as fathers for whom withholding presents a binding constraint.¹⁵

Parental bargaining and intrinsic motivation explanations are also consistent with a decline in visits in response to withholding. By examining which subpopulations are most affected by withholding, we can partially discriminate between these explanations. If parental bargaining is the primary explanation, then we should expect effects to be largest in cases in which fathers' time with the children is least valued by mothers. Father characteristics that are likely to be associated with high-quality parent-child contact should lead to smaller effects of withholding on behavior in a parental bargaining framework. If intrinsic motivation is the best explanation, we might expect to see negative effects of withholding for parents who owe back support as well as parents who do not, as both types of parents should experience a decline in intrinsic motivation as extrinsic motivation (or enforcement) increases.

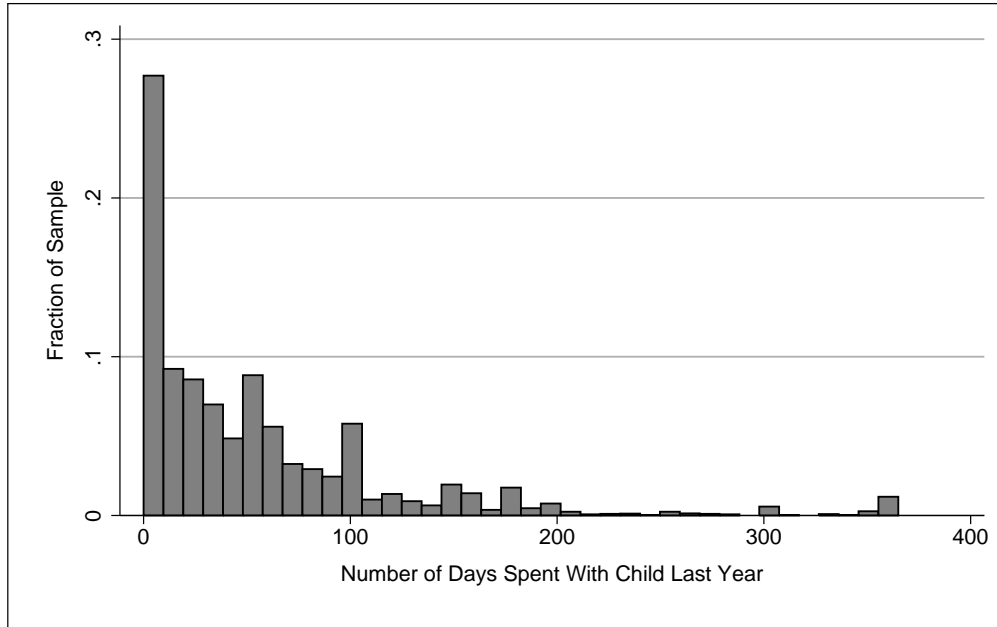
5 Data and Methodology

I use pooled cross-sectional data from the Current Population Survey's Child Support Supplement, which collected child support data beginning in 1979 and biannually since 1982 and asked whether child support payments are withheld from the noncustodial parent's paycheck in each survey from 1994 onward. I use data from the 1994, 1996, 1998, 2000, 2002, and 2004 surveys and I restrict the sample to legalized child support cases in which the mother is the custodial parent, which yields a base sample of over 6,500 observations for which mothers report whether or not child support payments were made via withholding and the number of child-parent contact days the previous year.¹⁶ The survey interviews custodial parents

¹⁵If the withholding began immediately when the child support order was issued, this way of observing the counterfactual may be problematic. However, child support orders can and often do require fathers to pay retroactive support for periods before the order was issued unless he can prove he was paying informal support. Fathers who attempt to avoid paying formal child support by delaying getting a formal child support order will owe retroactive back support even if they face immediate withholding, and in most states they will also owe interest on the unpaid support. Unemployment spells, job changes, and self-employment can also allow back support to accrue for fathers who do not voluntarily pay full support. In robustness checks I have also restricted the sample to fathers who pay full support each month and to fathers whose payments are within five percent of the amount of child support due. These sample restrictions do not affect the results.

¹⁶The father is the custodial parent in about 10 percent of cases reported in the CPS. I exclude these cases because it is relatively unusual for fathers to have primary custody of their children; mothers who do not have custody may have different reasons for not spending time with their children than fathers who do not have custody. However, including cases in which the father has custody in the estimation sample does not

Figure 2: Histogram of Number of Days Per Year Noncustodial Fathers Spent with Children, Pooled 1994-2004 CPS Data



about their child support agreements, the amount and method of child support payments, and children’s interactions with their noncustodial parent. Unfortunately, as with most child support surveys, there is very little information about the noncustodial parent. The complete supplement includes approximately 90 questions on child support and can be viewed online at the Census website.¹⁷ Mothers report the amount of formal child support paid each year, and overall approximately 60 percent of fathers pay the full amount of formal support due. Among fathers without withholding, about 65 percent of fathers pay full support.

The CPS asks custodial mothers to report two main measures of children’s interactions with noncustodial fathers. First, they report the number of days on which their child saw the father in the previous year. Figure 2 shows a histogram of contact days: about 10.2 percent of the base estimation sample report zero contact days, and about 1.0 percent report 365 contact days. The mean and standard deviation of the contact days variable are 54.9 days and 67.2 days respectively. Mothers also report whether fathers provided in-kind support (instead of or in addition to formal child support) by providing or helping to pay for food, clothing, health care, gifts, or child care or summer camp (the amount of support provided is not available). Means of these variables are provided in Table 4. Approximately 79 percent of mothers report that fathers provided gifts. Clothing was the second-most common form of in-kind support, with about 43 percent of fathers providing clothing. Food was provided

change the results.

¹⁷See the CPS technical documentation at <http://www.census.gov/cps/>.

by 28 percent of fathers and one quarter of fathers helped pay for medical care. Only 9 percent of fathers helped pay for child care or summer camp.

5.1 Empirical Strategies

In order to understand how withholding affects fathers' interactions with their children, a reasonable first step is to estimate the linear equation

$$y_i = \alpha + \gamma W_i + X_i\beta + \epsilon_i, \quad (14)$$

where y_i is the outcome of interest (either the number of contact days between parents and children or an indicator for whether the parent provided in-kind support), W_i is an indicator variable equal to 1 if the father's child support payments are withheld from his paycheck, X_i is a vector of control variables, and ϵ_i is the error term.¹⁸ The theoretical models outlined in Section 3 imply that the effect of withholding will vary depending on whether fathers would pay full support in the absence of enforcement. To address this, I estimate separate effects for the two types of fathers by including an interaction term:

$$y_i = \alpha + \gamma W_i + \eta B_i + \delta(W_i \times B_i) + X_i\beta + \epsilon_i, \quad (15)$$

where B_i is an indicator variable equal to 1 if the father owes back support. The effect of withholding for fathers who are not in arrears is captured by γ , while the effect for fathers who are in arrears is measured by $\gamma + \delta$. In addition, I estimate equation (14) separately for fathers who do and do not owe back support. Fathers who willingly pay child support are likely to differ from fathers for whom enforcement is binding on numerous unobserved dimensions. In the model in equation (15), the effects of all control variables are constrained to be the same for all fathers. Running the regressions separately on the two subsamples recognizes the differences inherent in these samples.

Furstenberg (1992) lists the following reasons for fathers' decisions not to participate in their children's lives: (1) denial of paternity; (2) another man (such as the mother's new boyfriend or husband) fills the role of "father" in their child's life; (3) the mother spends child support money on herself; (4) the mother denies the father access to the child; and (5) there is conflict between the man and the child's mother.¹⁹ Interestingly, there is some

¹⁸The father-child days of contact variable is a count variable with a range between 0 and 365. Results from an alternative specification in which I use maximum-likelihood regression in which the underlying distributional assumption is Cameron and Trivedi's (1986) NB2 parameterization of the negative binomial distribution are similar to the OLS results both qualitatively and quantitatively.

¹⁹See Argys and Peters (2001) for the effects of paternity establishment on child support payments. Danziger and Radin (1990) examine father-child contact in the presence of the child's grandfather and

evidence that African-American nonresident fathers (who pay less child support on average) are considerably more likely to see their children regularly (Danziger and Radin 1990, Argys and Peters 2001). To address some of these factors, I control for whether there is an adult male living in the household (who may serve as a new father figure) and whether the father has legal visitation privileges.

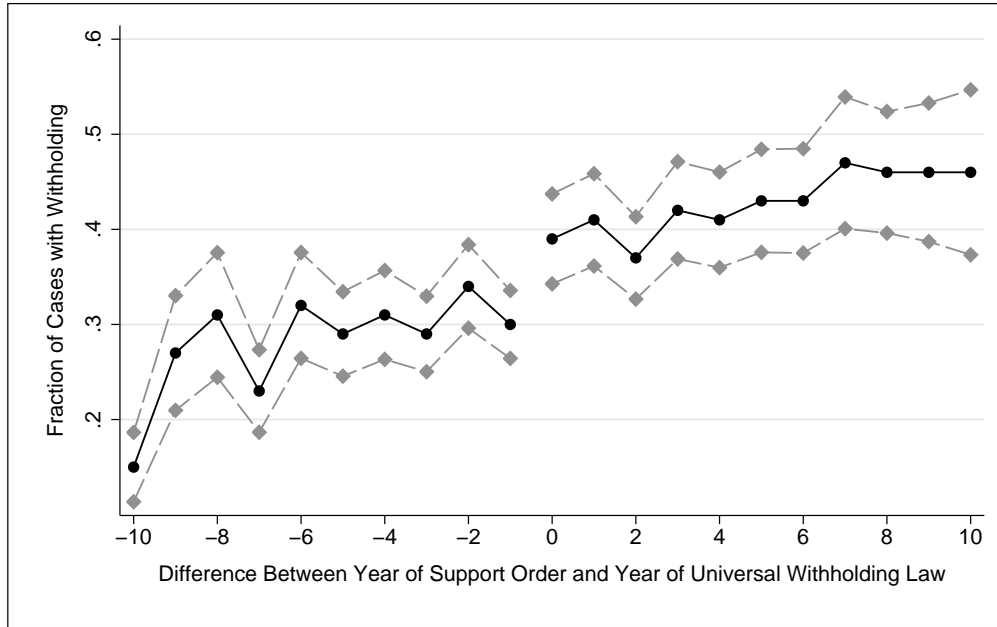
Since cases in which fathers have been in arrears or mothers were on welfare have historically been selected for withholding, the assumption that $\text{Cov}(W, \epsilon) = 0$ is unlikely to hold. Although the CPS includes data on current welfare status and whether parents owe back support and I can control for them directly, I do not observe past welfare or arrears status and cannot fully control for these factors. Since the custodial mother responds to the survey, I also observe very little about father characteristics that could be correlated with both withholding and parent-child contact: for example, I do not know whether fathers work in the regular sector or actively avoid withholding by working informally. Consequently, OLS results are likely to be biased, but the expected sign of the bias is unclear. Parents who take less pleasure in spending time with their children are probably more likely to miss child support payments and to be forced to go on withholding, so that selection on payment history would downwardly bias the OLS results. (Alternatively, parents who owe back support may spend less time with their children; they may feel guilty or the custodial parent may restrict access to the children as a punishment.) But noncustodial parents who actively avoid child support enforcement and exit the formal labor force or become self-employed are much less likely to have withholding orders. This factor biases OLS results upward because parents whose child support payments are withheld are, to a certain extent, voluntarily complying. Additionally, especially prior to passage of universal withholding laws, judges often had discretion to order withholding in individual cases. Judges may have based their decisions in part on other characteristics we cannot observe but that are correlated with parent-child contact or the likelihood of providing in-kind support.

To address the endogeneity of withholding, I instrument for withholding status using two alternative instruments. First, I use variation in the timing of child support orders relative to the state's universal withholding law as an instrument for withholding status because orders issued after the withholding law should be more likely to have withholding. Second, I use variation in the observed level of withholding law implementation by state and year as an alternative source of identification.

For the first instrument, the identifying variation is the within-state variation in the timing of order dates relative to the law. I use three measures of this variation: (1) an

finds no effect on fathers' involvement. Aughinbaugh (2001) develops a model in which fathers monitor mothers' spending on the child.

Figure 3: Withholding Rates Before and After State Universal Withholding Laws
(No Arrears, No AFDC Sample)



indicator for whether a universal withholding law applies to the case based on order timing; (2) a variable equal to zero if the order was issued before the state withholding law and equal to the difference between the year of the support order and the year of the law otherwise; and (3) the difference between the year of the support order and the year of the law. The second measure allows for the possibility of gradual implementation. The third measure takes on negative values when the support order pre-dates the law and positive values otherwise.

Does including variation in the length of time prior to the withholding law provide useful information? Figure 3 shows withholding rates by the difference between the order date and year of the law for child support orders for cases in which mothers do not report AFDC status and fathers are not in arrears. Dashed grey lines indicate the 95-percent confidence interval around the mean. First, the break in the graph at zero indicates that implementation of universal withholding laws significantly changed withholding rates.²⁰ Second, the fraction of cases in which withholding applies increases as the difference between date of the support order and the date of the universal withholding law increases. This suggests that the timing of the support order relative to the timing of the law is important for orders issued both before and after the law. It is likely that this is due to how withholding orders were issued for individual cases: judges and child support enforcement officers had

²⁰Figure 3 shows the fraction of cases with withholding for values of the instrument between -10 and 10. The full range of values for this instrument is -28 to 21; results are not sensitive to restricting the sample to the -10 to 10 range.

discretion to require withholding in individual cases prior to passage of universal withholding laws, and in some states judges had discretion to forego withholding even after the laws were passed. It is reasonable to believe that judges' use of withholding changed with changes in the legal climate and that the legal climate would increasingly favor withholding as the law date drew nearer. This bidirectional instrument consequently captures more information than a unidirectional instrument which only uses variation in time after the law passed.

Universal withholding laws do appear to have increased withholding rates in most states, as shown in Figure 3 and Table 2, ensuring that order timing should be correlated with actual withholding status. Identification also requires that the timing of the order date does not affect the dependent variable except through withholding status. So long as parents do not pursue new orders in order to receive withholding, it is reasonable to believe that the variation in order timing has no direct effect on how much time fathers spend with their children. The frequency with which new orders can be issued is generally limited by state law, which makes requesting new orders for the purpose of obtaining withholding more difficult. In addition, since parents could request withholding on existing orders, there was no incentive to pursue a new order for purposes of obtaining withholding.

Nevertheless, it is possible that orders are updated more frequently for some types of parents so that unobserved factors affect both order date and frequency of contact. To address this, I use variation in states' implementation of universal withholding laws as an alternative instrument for withholding status. Using the CPS data, I construct a sample of child support cases not eligible for withholding on the basis of arrears or AFDC status (and who would consequently be eligible for universal withholding) in each survey year. I then construct the percent actually facing withholding in that survey year. This measure captures the degree to which universal withholding laws were implemented in states over time.

6 Results

6.1 Summary Statistics

Table 4 presents summary statistics for the full sample and by withholding treatment status. Columns 1 and 2 report means and standard deviations for all cases. Columns 3 and 4 report the difference in means between the sample of cases with withholding and the sample of cases without and the associated standard error of the difference. Overall, 46 percent of custodial mothers with legal child support agreements report that their child support case has income withholding. Cases with withholding are significantly different from cases without withholding on numerous dimensions: fathers with withholding spend 6.3 fewer days per

Table 4: Sample Means, by Reported Withholding Status

	Mean	Std. Dev.	Difference, Cases With-Without Withholding	Std. Error	N
Child support payments withheld from paycheck	0.46	0.50			6779
Number of days child spent with father last year	54.9	67.2	-6.33**	(2.07)	6779
Father provided food/groceries	0.28	0.45	-0.05**	(0.01)	6779
Father provided clothing/diapers	0.43	0.50	-0.04**	(0.01)	6779
Father provided money for medical care	0.25	0.43	-0.08**	(0.01)	6779
Father gave birthday, holiday, or other gifts	0.79	0.40	-0.07**	(0.01)	6779
Father paid for child care or summer camp	0.09	0.29	-0.05**	(0.01)	6779
Father owes back support	0.28	0.45	0.20**	(0.01)	6723
Mother's age	36.2	7.6	-2.90**	(0.21)	6779
Mother is black	0.13	0.33	0.07**	(0.01)	6779
Mother is hispanic	0.06	0.25	0.01	(0.01)	6779
Mother is currently married	0.29	0.46	-0.04**	(0.01)	6779
Mother never married	0.15	0.36	0.11**	(0.01)	6779
Mother unemployed or not in labor force	0.23	0.42	0.07**	(0.01)	6779
Household income, national ranking (1-20)	8.20	5.39	-1.64**	(0.17)	6100
Mother has HS degree but not 4-year college	0.74	0.44	0.06**	(0.01)	6779
Mother has 4-year college degree or more	0.17	0.38	-0.09**	(0.01)	6779
Father has legal visit privileges	0.65	0.48	-0.05**	(0.02)	6779
Father lives in same state	0.79	0.41	0.02	(0.01)	6779
Youngest child on support order is male	0.48	0.50	-0.01	(0.01)	6724
Age of youngest child on child support order	10.1	4.8	-1.47**	(0.14)	6724
Years between survey and original support order	6.48	4.35	-0.55**	(0.12)	6779
Father figure lives in household	0.49	0.50	-0.01	(0.01)	6779
Mother receives food stamps	0.21	0.41	0.10**	(0.01)	6779
Mother receives AFDC/ADC/TANF payments	0.12	0.32	0.07**	(0.01)	6779
Number of children covered by support agreement	1.70	0.85	0.09**	(0.03)	6779
Child support received last year (2000 \$)	\$4,168	\$4,507	-\$759**	(133)	5649
Child support due last year (2000 \$)	\$4,672	\$4,202	-\$106	(1229)	6702

Standard errors of mean differences between cases with and without withholding are clustered at the state level. * Significant at 5%, ** significant at 1%.

year (or about 11 percent fewer days) with their children than fathers without withholding and are less likely to provide all types of in-kind support. They are also more than twice as likely to owe back support, and mothers report receiving \$759 less in support each year (a difference of about 17 percent) although there is no significant difference in support due. In cases with withholding, mothers are younger, more likely to be black, more likely to never have been married, less educated, and almost twice as likely to be on welfare. These differences across withholding status necessitate conditioning on these observed variables but also suggest the possibility of similar differences on unobserved variables, which I will address using an instrumental variables approach.

6.2 OLS and Probit Results

Table 5 presents results from OLS regressions that estimate equations (14) and (15), where the dependent variable is the number of father-child of contact days. They indicate that fathers whose child support payments are withheld have contact with their children on 6.6 fewer days per year than fathers whose child support payments are not withheld (column 2), a difference that is quite similar to the unconditional mean difference in contact days for fathers with and without withholding. The third column of Table 5 presents results from the model in equation 15: the interaction term on withholding and back support is positive, partially offsetting the overall negative effect of withholding on contact. Columns 4 and 5 show the results of the regressions run separately on the samples in which the father does and does not owe back support. For fathers who owe back support, the net effect of withholding on father-child contact is near zero and not significant; for fathers who do not owe back support, withholding has a significant negative effect on parent-child contact. These effects are consistent with the predictions of a salience model; for fathers whose support payments are the same with or without withholding, automatic withholding may make fathers' responsibilities toward their children less salient and they may decrease contact with their children. For fathers who pay more support as a consequence of withholding, the salience of their responsibilities toward their children may have increased.

Other results from the OLS regressions coincide with most previous research about determinants of visitation and contact. Not surprisingly, fathers who owe back support are significantly less likely to spend time with their children and visit an average of 19.4 days per year less than fathers who do not owe back support. Noncustodial fathers are much more likely to have frequent contact when they live near their children: fathers who live in the same state visit their children 32 days per year more than parents who live out of state. Parents are also more likely to visit when their children are younger. Older children require less child care and have their own interests and time commitments. Also, contact might decline as the time since separation increases. Fathers visit an average of 4.7 days per year more when the youngest child on the support order is male; fathers may feel that their presence is more important for male children. Although the CPS data does not include the parents' date of separation, this can be proxied using the date of the original child support order. An additional year between the survey date and the initial support order decreases the average days of contact by about 0.8 days. Interestingly, the custodial parent's marital status and the presence of another adult male in the household do not have a significant effect on the noncustodial parent's visits.

Table 6 shows mean marginal effects from probit regressions estimating the impact of withholding on the likelihood that noncustodial parents provide in-kind support or money

Table 5: OLS Regressions: Effect of Withholding on Father-Child Contact

	All Cases	All Cases	All Cases	Arrears	No Arrears
Child support payments withheld from paycheck	-8.69** (2.03)	-6.58** (1.85)	-8.51** (2.16)	-0.23 (3.00)	-9.45** (2.27)
Father owes back support		-19.44** (1.92)	-23.45** (2.56)		
Child support withheld * owes back support			6.95* (3.07)		
Mother's age		0.08 (0.17)	0.08 (0.17)	0.23 (0.30)	0.01 (0.21)
Mother is black		-3.21 (2.93)	-3.06 (2.92)	4.17 (5.04)	-7.51 (4.90)
Mother is hispanic		-5.35 (4.00)	-5.31 (4.00)	1.05 (6.73)	-6.98 (4.61)
Mother is currently married		-2.96 (2.58)	-2.90 (2.57)	3.69 (3.98)	-6.04 (3.53)
Mother never married		4.58 (2.42)	4.47 (2.42)	3.76 (3.93)	7.11* (3.45)
Mother unemployed or not in labor force		4.87* (2.39)	4.86* (2.39)	6.28* (3.12)	4.80 (2.93)
Household income percentile, national ranking		0.40 (0.22)	0.40 (0.22)	-0.08 (0.36)	0.61* (0.27)
Mother has HS degree but not 4-year college		-4.37 (3.21)	-4.47 (3.20)	-0.92 (4.69)	-5.47 (3.94)
Mother has 4-year college degree or more		-1.75 (3.80)	-1.99 (3.82)	2.51 (4.73)	-3.52 (4.93)
Father has legal visit privileges		2.71 (1.70)	2.74 (1.70)	5.19 (2.77)	1.37 (1.99)
Father lives in same state		32.23** (1.62)	32.19** (1.64)	23.38** (2.03)	36.02** (2.19)
Youngest child on support order is male		4.68** (1.66)	4.68** (1.65)	3.69 (2.58)	5.09* (1.92)
Age of youngest child on child support order		-1.23** (0.28)	-1.23** (0.28)	-1.47** (0.54)	-1.16** (0.31)
Years between survey and original support order		-0.83** (0.22)	-0.82** (0.22)	-0.03 (0.43)	-1.05** (0.24)
Father figure lives in household		-2.77 (2.71)	-2.75 (2.70)	-1.32 (5.64)	-2.74 (2.97)
Mother receives food stamps		-7.03* (3.22)	-7.06* (3.23)	-1.67 (5.61)	-9.00* (4.43)
Mother receives AFDC/ADC/TANF payments		1.08 (4.04)	1.34 (4.07)	-2.41 (6.91)	2.61 (5.72)
Constant	56.09** (2.43)	51.31** (7.01)	69.02** (7.52)	50.24** (9.87)	86.12** (8.95)
R-Square	0.017	0.099	0.099	0.080	0.094
N	6779	6668	6668	1852	4816

Regressions include state and year effects. Standard errors clustered by state in parentheses. * significant at 5%; ** significant at 1%

Table 6: Mean Marginal Effects from Probit Regressions: Effect of Withholding on In-Kind and Additional Support

	Father Provided the Following Kinds of Support				
	Food or groceries	Clothes, diapers or shoes	Medicine, medical expenses	Child care/ summer camp	Birthday, holiday, other gifts
Arrears					
Child support payments withheld	-0.013 (0.019)	0.021 (0.025)	0.004 (0.018)	-0.007 (0.010)	0.003 (0.018)
N	1849	1848	1735	1378	1844
Pseudo R-square	0.0807	0.0542	0.0968	0.1422	0.0759
Prediction rate	0.632	0.598	0.652	0.682	0.630
No Arrears					
Child support payments withheld	-0.040** (0.014)	-0.052** (0.015)	-0.035** (0.013)	-0.049** (0.011)	-0.030* (0.012)
N	4805	4799	4801	4803	4781
Pseudo R-square	0.0509	0.0261	0.0668	0.0972	0.0795
Prediction rate	0.600	0.580	0.601	0.633	0.659

Regressions include state and year effects. Other control variables are identical to those included in the regressions in columns 4 and 5 of Table 5. Standard errors clustered by state in parentheses. * significant at 5%; ** significant at 1%

^aThe prediction rate is the rate of correct predictions. I construct it following Heckman and Smith (1999) by comparing the predicted probabilities to the population proportion p . If the predicted probability is larger than p , the observation is predicted to be 1 and is predicted to be 0 otherwise. Random prediction corresponds to a prediction rate of 0.5.

for food, clothing, health care, gifts, and child care or summer camp in addition to their regular child support. For fathers who owe back support, none of the effects are statistically different from zero. For fathers who do not owe back support, effects are statistically different from zero in all categories: fathers with withholding are 3 percent less likely to buy gifts and 5.2 percent less likely to provide clothes or diapers.²¹ The OLS and probit results provide preliminary evidence that child support payment method has a non-neutral effect on fathers' interactions with their children. However, since unobserved father characteristics may affect both payment method and parent-child contact, I next turn to instrumental variables techniques.

²¹Linear probability estimates yield very similar results.

Table 7: First-Stage Regressions: Impact on Withholding Status

Instrument	All Cases, State, Year Effects Only	All Cases, All Controls	Arrears, All Controls	No Arrears, All Controls
(Year of Support Order-Year of Law)	0.014** (0.002)	0.015** (0.002)	0.013** (0.004)	0.016** (0.002)
R-Square	0.086	0.169	0.112	0.152
F-Statistic	77.9	48.3	8.5	53.9
(Order Year - Withholding Law Year) if > 0, 0 Otherwise	0.015** (0.003)	0.009* (0.003)	0.005 (0.004)	0.010** (0.004)
R-Square	0.079	0.164	0.107	0.147
F-Statistic	35.5	7.0	1.4	8.1
Indicator for Support Order after Year of Law	0.111** (0.015)	0.068** (0.016)	0.050 (0.033)	0.074** (0.018)
R-Square	0.081	0.165	0.108	0.148
F-Statistic	53.2	18.5	2.3	16.8
Fraction of Eligible Cases with Universal Withholding	0.671** (0.043)	0.644** (0.048)	0.218 (0.116)	0.827** (0.055)
R-Square	0.088	0.176	0.108	0.169
F-Statistic	240.4	182.4	3.5	223.9

Regressions include state and year effects and controls (where indicated) identical to those in Table 5 columns 2, 4, and 5. Standard errors clustered by state in parentheses. * significant at 5%; ** significant at 1%

6.3 IV 2SLS Results

Table 7 presents first-stage regression results for all instruments. The first panel shows that a one-year increase in the difference between the support order date and the withholding law corresponds to a 1.4 percentage point increase in the likelihood of having a withholding order. Including controls does not change the magnitude of the estimates greatly but explains much more of the variation in withholding status. When the sample is restricted to cases in which the father does not owe back support, the coefficient is larger; this is not surprising since fathers who owe back support were subject to withholding regulations prior to introduction of universal withholding laws and should be influenced less by their introduction. For similar reasons, the first-stage F-statistic is much larger for the no-arrears sample than for the arrears sample. The second panel shows first-stage results from the unidirectional version of the instrument. The pattern of coefficients is the same, but F-statistics for this version of the instrument are lower than for the first specification, indicating a weaker instrument. The third panel shows results for the indicator variable version. Support orders for non-arrears cases issued after the universal withholding law date are 7.4 percentage points more likely to have withholding than orders issued before the law. The last panel shows first-stage results for the alternate version of the instrument. Having a support order in a state and year with

Table 8: IV 2SLS Results: Effect of Withholding on Number of Days Father Spends with Child, By Arrears Status

Instrument	Arrears	No Arrears
(Year of Support Order-Year of Law)	11.86 (33.84)	-58.83** (20.65)
First stage F-statistic	8.5	53.9
(Order Year - Withholding Law Year) if > 0, 0 Otherwise	-7.79 (100.22)	-98.43* (46.84)
First stage F-statistic	1.4	8.1
Indicator for Support Order after Year of Law	16.82 (80.10)	-29.46 (38.15)
First stage F-statistic	2.3	16.8
Fraction of Eligible Cases with Universal Withholding	80.74 (73.70)	-26.56* (11.60)
First stage F-statistic	3.5	223.9

Regressions include state and year effects and controls identical to those in Table 5 columns 4 and 5. Standard errors clustered by state in parentheses. * significant at 5%; ** significant at 1%

a one percentage point higher level of withholding implementation is associated with a 0.8 percentage point higher probability of withholding.

As expected, fathers' arrears status and mothers' AFDC or TANF receipt increases the likelihood of withholding by large amounts (not shown). Being in arrears increases the likelihood of withholding by about 18 percentage points and, for fathers who do not owe back support, mothers' AFDC or TANF receipt increases the likelihood of withholding by about 10 percentage points. African-American mothers are more likely to have withholding while more highly educated mothers are less likely to have withholding. This may reflect differences in unobserved past payment history or welfare status by race and education. Alternately, judges or custodial mothers may pursue withholding more intensively depending on family demographics.

The two-stage least squares instrumental variable regression results for parent-child contact are shown in Table 8. Withholding appears to have a large negative effect on the frequency of parent-child contact for fathers who do not owe back support, while having a positive (but never significant) effect on contact frequency for fathers who are in arrears. Although the effects for the no-arrears sample are significant for only three of the four instruments, the pattern of the coefficients is the same regardless of the choice of instrument and the effect is significant for both the instruments using within-state variation in order timing and for the instrument using cross-state and time variation in withholding implementation. The negative results for fathers who do not owe back support are sensitive to inclusion of the

Table 9: IV 2SLS Results: Effect of Withholding on In-Kind Support

	Outcome				
	Food	Clothing	Medicine	Child Care/Camp	Gifts
Arrears					
Child support payments withheld	-0.11 (0.24)	-0.28 (0.30)	0.59* (0.26)	0.08 (0.09)	0.00 (0.31)
Pseudo R-Square	0.066	-0.023	-0.642	0.025	0.093
N	1852	1852	1852	1852	1852
First stage F-statistic	8.5	8.5	8.5	8.5	8.5
No Arrears					
Child support payments withheld	-0.22 (0.16)	-0.60** (0.20)	-0.06 (0.15)	-0.24* (0.11)	-0.03 (0.12)
Pseudo R-Square	0.030	-0.214	0.076	-0.013	0.067
N	4816	4816	4816	4816	4816
First stage F-statistic	53.8	53.8	53.8	53.8	53.8

Covariates are identical to those in columns 4 and 5 of Table 5. Regressions include state and year effects. Standard errors clustered by state in parentheses. * significant at 5%; ** significant at 1%

“Years between survey and original support order” variable, which proxies for the length of time since the parents’ relationship ended. More recent orders are likely to be correlated with both closer father-child relationships (because less time has passed since the father left the household) and higher likelihood of withholding. When the instrument used is the fraction of eligible cases with universal withholding in the state-year, the results are not sensitive to inclusion of the time since the parents’ relationship ended. The results are not sensitive to including additional controls for the amount of child support due annually, the fraction of child support due that is paid, or indicators for whether the mother contacted the state Office of Child Support Enforcement for help locating the father or enforcing a child support order.

The results for in-kind support (shown in Table 9) are similar.²² For fathers who do not owe back support, the coefficient on withholding is negative for all types of in-kind support and is significant for clothing and child care/camp. For fathers who owe back support, the results are not consistent in sign and are not significant with the exception of a positive coefficient on withholding for the “father provided money for medical care” outcome.

As with the OLS results, these results are not consistent with the standard model of payment in which payment method is neutral. Instead, child support payment method appears to have a large impact on parent-child contact for fathers who are not in arrears.

²²Results shown use the difference between the order year and law year as the instrument. Results using state withholding levels are not significant.

For these fathers, child support withholding should affect payment method but not payment amount. The difference between parent-child contact, and between fathers' provision of clothes and gifts, between otherwise similar fathers with different payment methods suggests that use of automatic payments for child support delivery can alter parents' behavior toward their children.

Each explanation offered above (changes in salience, changes in intrinsic motivation, and changes in fathers' bargaining power) is consistent with this result and all of these factors may act simultaneously. Consequently, it is not possible to conclusively identify which mechanism drives the results. However, by examining which subpopulations are most affected, we can partially discriminate between these explanations. If parental bargaining is the primary explanation, then we should expect effects to be largest in cases in which fathers' time with the children is least valued by mothers. Father characteristics that are likely to be associated with high-quality parent-child contact should lead to smaller effects of withholding on behavior in a parental bargaining framework. If intrinsic motivation is the best explanation, we might expect to see negative effects of withholding for parents who owe back support as well as parents who do not, as both types of parents should experience a decline in intrinsic motivation as extrinsic motivation (or enforcement) increases.

6.3.1 Exploring the Estimates: Magnitudes and Mechanisms

The IV estimates for the relationship between withholding and parent child contact shown in Table 8 are very large in magnitude, particularly for the first two instruments that rely on variation in order timing. In fact, the point estimates in the first specification is similar in magnitude to the unconditional mean of the visits variable. The standard errors on these estimates are also large, so relatively little importance should be placed on the value of the point estimate. However, one explanation for the size of the IV estimates may come from who is affected by the withholding law. IV estimates apply to marginal cases for which the the law affects withholding status. The 2SLS estimate can be thought of as a weighted average of the effect of withholding on different types of people who are affected by the instrument. If the subgroup of child support cases that are affected by withholding laws have a larger effect of withholding on visits, this would account for the large magnitude of the IV estimates. In addition, examining the characteristics of the subgroups and the magnitude of the effects by subgroup allows us to think about which explanations for the effects of the change in payment method are most consistent with the results.

The instrumental withholding laws are most likely to affect fathers who were not already subject to withholding under other laws. As discussed above, universal withholding laws should be less likely to change withholding status for fathers who owe back support or cases

in which the mother receives welfare. In addition, withholding laws are more likely to affect withholding status for fathers who live in the same state as the custodial mother; states have difficulty enforcing withholding orders across state lines. Judges and child support enforcement officers had discretion to pursue withholding prior to universal withholding laws. When the laws removed that discretion, some fathers were more affected than others. If judges and enforcement officers considered income, education, age, or race when deciding whether to pursue withholding, we might expect high-income, highly educated white fathers to be most affected by universal withholding laws. If mothers had contacted their state Office of Child Support Enforcement for help obtaining child support, withholding laws would also be less likely to affect real withholding status because the enforcement office might use their discretion to initiate withholding in response to the mother's complaint. Generally, universal withholding laws are blind to father characteristics and will consequently affect "good" fathers who were not subject to withholding for other reasons but against whom withholding can be implemented successfully.

Card (1995) suggested that if instruments affect groups differently, we can use an index to measure the extent to which an observation is likely to be affected by the instrument. Kling (2001) describes a procedure that compares groups with similar exposure to the instrument and treats the IV 2SLS estimate as a weighted average of effects within each subgroup; groups affected more by the instrument receive a higher weight. I follow these procedures to examine which child support cases are affected by the binary version of the law instrument and consequently contribute most to the large IV estimates.

First, I construct an index of parent quality: predicted withholding status based on the factors (other than universal withholding laws) that determine withholding, such as demographic characteristics, past payment behavior, whether the father lives in the state, mothers' contact with state welfare agencies, and state and year effects to account for non-withholding features of state child support enforcement. To construct the index, I estimate a linear probability regression of withholding on the independent variables using only the observations unaffected by a universal withholding law (for which the support order was issued prior to universal withholding).²³ I then use the coefficients from this regression to predict the probability of withholding in the absence of universal withholding laws for the full sample.

I divide this sample into four quartiles based on the 25th, 50th, and 75th percentiles of the estimation sample. The lowest quartile includes individuals least likely to have withholding in the absence of withholding laws. Table 10 shows summary statistics for each quartile.

²³Although the outcome variable is binary, I use a linear probability model because it is simpler to calculate the variance of the probability of withholding in the linear framework.

Table 10: Characteristics of “Probability of Withholding” Quartiles

	Lowest	2nd	3rd	Highest
Child support payments withheld from paycheck	0.18	0.32	0.50	0.73
Number of days child spent with father last year	61.7	60.5	57.3	54.1
Father owes back support	0.02	0.06	0.22	0.52
Mother’s age	41.1	38.6	36.1	33.2
Mother is black	0.01	0.05	0.10	0.20
Mother is hispanic	0.03	0.04	0.07	0.09
Mother is currently married	0.38	0.33	0.32	0.24
Mother never married	0.01	0.04	0.11	0.27
Mother unemployed or not in labor force	0.10	0.15	0.22	0.33
Family income percentile, national ranking	11.0	9.0	7.3	5.4
Mother has HS degree but not 4-year college	0.61	0.73	0.77	0.78
Mother has 4-year college degree or more	0.37	0.23	0.14	0.08
Father has legal visit privileges	0.74	0.71	0.67	0.62
Father lives in same state	0.83	0.79	0.78	0.80
Father figure lives in household	0.50	0.50	0.50	0.47
Age of youngest child on child support order	12.3	11.3	10.2	8.6
Years between survey and original support order	7.45	6.88	6.40	5.78
Mother receives food stamps	0.02	0.07	0.15	0.36
Mother receives AFDC/ADC/TANF payments	0.00	0.01	0.07	0.22
Help from OCSE: locate other parent	0.00	0.01	0.04	0.13
Help from OCSE: establish support obligation	0.04	0.09	0.19	0.38
Help from OCSE: obtain collection	0.05	0.16	0.32	0.56
Fraction of due child support paid last year	1.02	1.09	1.07	0.94
N	997	1210	1403	1934

Mothers in cases in the lowest “probability of withholding” quartile are older on average, are much less likely to be black or hispanic, are more likely to have remarried, have higher income and are highly educated, and their children are older on average. In addition, they are much less likely to have had help from their state Office of Child Support Enforcement and on average fathers in the highest quartile paid a lower fraction of support due. In summary, before universal withholding laws, “bad” parents were more likely to have withholding. This comparison confirms that the withholding prediction regression divides cases along the “parent quality” dimension.

Next I estimate quartile weights for the IV estimates to measure how much results from each quartile impact the overall IV coefficients. In essence, the IV estimate weights the average treatment effects of withholding within each subgroup. I construct the weights following procedures laid out in Kling (2001) using the binary version of the law instrument. First, weights depend positively on the fraction of the sample within each quartile, which need not be equal because quartile cutoffs were estimated using only the subsample for which universal withholding laws did not apply: fractions are $f_q = P(Q)$ where Q identifies the

Table 11: IV Weights for Each “Probability of Withholding” Quartile

All Cases				
	Sample Fraction in Quartile	Variance of Binary Instrument by Quartile	$\Delta(\text{Withholding}) q$	IV Weight
Lowest quartile	0.180	0.130	0.101 (0.032)	0.454
2nd quartile	0.218	0.121	0.072 (0.030)	0.363
3rd quartile	0.253	0.114	-0.004 (0.028)	-0.020
Highest quartile	0.349	0.089	0.034 (0.027)	0.204

Does Not Owe Back Support				
	Sample Fraction in Quartile	Variance of Binary Instrument by Quartile	$\Delta(\text{Withholding}) q$	IV Weight
Lowest quartile	0.188	0.124	0.130 (0.037)	0.557
2nd quartile	0.219	0.118	0.084 (0.034)	0.396
3rd quartile	0.276	0.106	-0.009 (0.032)	-0.048
Highest quartile	0.317	0.097	0.017 (0.032)	0.096

Quartiles q were constructed by running a linear probability regression of withholding on the determinants of withholding listed in Table 10 and state and year effects for cases not subject to universal withholding laws, then generating predicted withholding for the full sample. Quartiles were constructed based on the 25th, 50th, and 75th percentiles of the estimation sample.

Column (1) reports the fraction of the overall sample in each quartile.

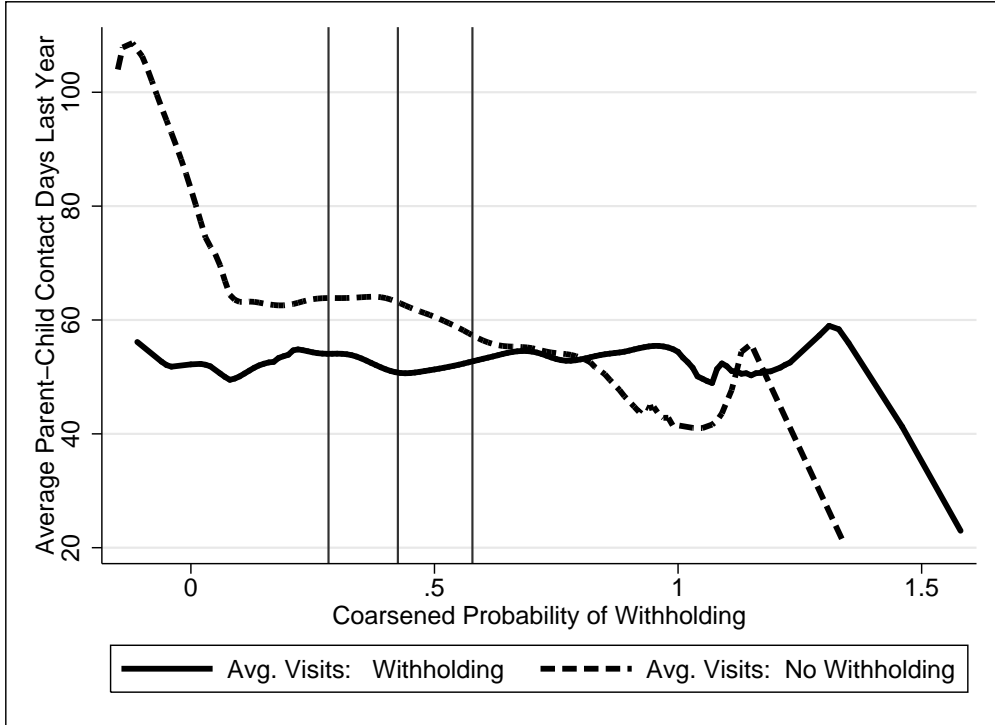
Column (2) is the estimated conditional variance, within each quartile, of the dummy variable indicating a universal withholding law applies to the case: $\hat{E}[P(Z|x, q)(1 - P(Z|x, q))]$.

Column (3) is the coefficient on the interaction term for the instrument dummy \times the quartile dummy in a regression of withholding on the quartile dummies, interaction terms, and x .

Column (4) is the IV weight: multiply columns (1), (2), and (3) and sum for all quartiles. The weight for each quartile is the row product over the sum.

population subgroup. Second, IV estimates with controls X and quartiles q are weighted by the within-quartile variance of the instrument Z conditional on X , $\lambda_{q|x} = P(Z|X, Q)(1 - P(Z|X, Q))$ (Angrist 1998). Quartiles in which there is more variance in the instrument across observations similar on X s receive more weight. Last, weights depend on the within-quartile impact of the binary withholding-law instrument Z on actual withholding: $\Delta W_{q|x} = E[E(W|Z = 1, X, Q) - E(W|Z = 0, X, Q)|Q]$. Naturally, quartiles in which the instrument

Figure 4: Heterogeneous Treatment Effects: Difference Between Father-Child Contact by Withholding Status



has a larger effect on actual withholding receive more weight in the IV. The IV weights are

$$\omega_q = \frac{f_q \lambda_{q|x} \Delta W_{q|x}}{\sum_q f_q \lambda_{q|x} \Delta W_{q|x}}.$$

Components of the weights for each quartile are shown in Table 11. Consistent with the expectation that universal withholding laws affected parents who were not otherwise candidates for withholding, the IV estimates place weight on the lower quartiles, that is, on cases with low probability of withholding in the absence universal withholding laws. The IV coefficients estimate the effect of withholding for relatively “good” fathers who have strong payment histories and have not caused mothers to contact child support enforcement agencies. These IV estimates are weighted heavily towards child support cases in which the custodial parent is more highly educated and has higher income and the children are older.

The IV estimates heavily weight the observations for which selection bias seems least likely to be of concern (either before or after instrumenting). The observations that contribute most to the IV results are cases for which payment amount and timing are least likely to change if withholding is imposed.²⁴ If salience is the mechanism by which payment method affects

²⁴The negative weights for cases in the third quartile are because the average difference between withholding status for cases subject to and not subject to withholding laws ($E[E[\text{withholding}|\text{law applies}, X] -$

Table 12: Frequency of Payment: Effect on Parent-Child Contact

Pay support more than once per month	4.08 (2.15)	5.97** (2.07)	6.73* (2.52)
Child support payments withheld from paycheck		-7.88** (1.77)	-7.04** (2.12)
Interaction			-1.64 (3.10)
R-Square	0.097	0.100	0.100
N	6665	6665	6665

Covariates are identical to those in column 3 of Table 5. Regressions include state and year effects. Standard errors clustered by state in parentheses. * significant at 5%; ** significant at 1%

behavior, larger effects for fathers whose payment method was determined by default (due to the withholding laws) are reasonable. Figure 4 is a lowess-smoothed graph that shows how the difference between average visits for fathers with and without withholding varies as the probability of withholding (as estimated above) varies: for “good” fathers with low probabilities, withholding is associated with lower visits. The dashed vertical lines divide the region into the four quartiles: outliers result in wider ranges for the highest and lowest quartiles. The graph provides an explanation for the large IV estimates: the lowest quartile, which receives the highest weight, has a group of fathers not subject to withholding with particularly high average visit levels, and the difference for this small group of fathers appears to drive the magnitude of the result. Generally, withholding appears to decrease parent-child contact among “good” fathers with the lowest probabilities of withholding prior to universal withholding laws, which is inconsistent with expectations about the subgroup we would expect to be most affected by changes in parental bargaining power. This suggests that the change in payment method has non-neutral effects on parental behavior and that bargaining models may not explain the effects.

If payment method affects salience of payment and this in turn affects parent-child contact, then we should expect other factors that affect salience of payment to affect parent-child contact similarly. Payment frequency may affect the salience of payment because frequent payments provide regular reminders to fathers about their parental responsibilities. Table 12 shows how payment frequency affects parent-child contact. Parents whose child support payment schedule requires payments more often than once a month spend 4 to 6 days more with their child each year than parents whose payments are due less frequently. When the payment

$E[\text{withholding}|\text{law does not apply}]$) is negative for this quartile. The estimate comes from the interaction term of the regression described in the table footnotes; it is negative but small in magnitude and statistically insignificant.

frequency indicator is interacted with withholding status, the coefficient on the interaction term is negative, indicating that the effect of payment frequency on contact is stronger for parents who pay directly rather than via withholding. This is consistent with both payment method and payment frequency contributing to salience of parental responsibilities.

7 Conclusions

Automatic payment methods such as automatic bill pay or income withholding may alter the salience of consumer expenditures, but estimating the effect of payment method on behavior is generally difficult because choice of payment method is endogenous. I use an unusual source of exogenous variation in payment method, state laws governing default payment methods for child support, to estimate the effect of automating child support payments on parents' behavior. I develop formal models of the effect of child support payment method when (1) payment method is neutral; (2) payment method alters the salience of support paid; and (3) payment method alters the salience of child's consumption. Using within-state variation in order timing relative to the timing of the law and variation in state withholding rates over time to instrument for withholding status, I find evidence that, for the sample of fathers whose payment amounts are unaffected by the law, fathers who pay child support via withholding spend less time with their children and provide less in-kind child support than fathers who make direct child support payments. For fathers whose payment amounts change in response to increased enforcement, I detect no significant effect. These results are consistent with a model of child support in which withholding lowers the salience of child's consumption and reject standard models in which behavior does not depend on payment method.

Payment method may affect behavior through mechanisms other than salience. One possibility is that, rather than reducing salience, child support withholding reduces fathers' sense of responsibility toward their children and reduces their intrinsic motivation to spend time with them. Another possibility is that mothers and fathers bargain over child support and mothers restrict access to children when fathers do not pay. If withholding increases mothers' bargaining power, fathers may be less able to "pay" for access to their children. Although the results above cannot confirm whether payment effects are due to salience, it is difficult to reconcile the results with a standard model in which payment method does not affect choice. The results above strongly indicate that, as payments in many arenas become increasingly automated, we can expect behavioral responses. Automatic payments offer many efficiency gains: they are an extremely efficient means of child support enforcement. However, as payments become increasingly automated we may expect more behavioral

changes; new sources of variation in payment method as automation becomes more available may help determine the size of those effects and the mechanisms through which they work.

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