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FAMILY BARGAINING AND WELFARE

Abstract

Recent research on household behavior suggests that, *ceteris paribus*, a woman's "power" within a household influences consumption and time allocation choices. From an empirical point of view, a central stumbling block in this line of inquiry has been identification of sources of "power" that can plausibly be treated as exogenous. Aid to Families with Dependent Children, AFDC, was paid only to *single* women with children. The benefit level provides a natural fall-back for a low-income woman with children who is contemplating separation from her partner. As AFDC payments increase, separation will become more attractive and, we conjecture, the relative bargaining power of the woman in a household should also increase. If this is true, and if bargaining power does affect allocation decisions within the household, then the AFDC benefit level should affect household choices in *intact* families. This hypothesis is tested using the PSID from 1968 through 1992. Benefit levels, which (conditional on family size) vary across states and over time are treated as exogenous. In order to sweep out household-specific unobserved heterogeneity, models include household fixed effects. In addition, the model predicts the behavior of households with young children should be influenced by AFDC but not that of households with no children. Second, AFDC is unlikely to be paid to women in higher income households and so it should have a bigger influence on the behavior of lower income households. The results are consistent with these predictions. AFDC generosity does affect the allocation of resources in households with young children, and particularly lower income households with very young children. Corroborating evidence is drawn from the Consumer Expenditure Survey. We conclude that options outside marriage, as indicated by the generosity of AFDC benefits, affect bargaining power of women within marriage which, in turn, influences household resource allocation decisions.

Resumen

Las investigaciones recientes sobre la conducta familiar, sugieren, *ceteris paribus*, que las decisiones sobre consumo y ocio del hogar son influenciadas por el poder de negociación de la mujer. Con el fin de estudiar a fondo la mecánica de asignación de recursos dentro del hogar, la literatura empírica ha enfocado sus esfuerzos en detectar factores exógenos relacionados con el poder de negociación de la mujer. La generosidad del programa social norteamericano *Aid to Families with dependent Children* (AFDC), dirigido a mujeres *solteras* pude considerarse como una forma de seguro para mujeres con hijos que contemplan una separación conyugal. Por lo tanto, un incremento en la generosidad de AFDC puede aumentar el poder de negociación de estas mujeres dentro del hogar.. Si la hipótesis es correcta, el nivel de AFDC debiera modificar las decisiones de asignación de recursos dentro del hogar en familias *intactas*. Esta hipótesis es analizada con información longitudinal sobre hogares proporcionada por el *Panel Survey of Income Dynamics* (PSID) para el periodo 1968-1992. La variación de AFDC a través del tiempo y entre estados de la Unión Americana es considerada exógena. La heterogeneidad no observada a nivel hogar es tratada a través de efectos fijos a nivel familiar. La hipótesis de trabajo predice que AFDC tendrá un efecto en la asignación de recursos en hogares con hijos menores a 18 años y de escasos recursos económicos. Los resultados obtenidos son consistentes con esta afirmación. La generosidad de AFDC afecta la asignación de recursos en hogares con hijos pequeños, y en particular en hogares con ingresos bajos e hijos pequeños. Esta evidencia es a su vez corroborada en forma independiente con información proveniente de una base de datos adicional: el *Consumer Expenditure Survey* (CEX). Se concluye, entonces, que factores externos al hogar, como lo es la generosidad de AFDC, afectan el poder de negociación de las mujeres dentro del matrimonio y por tanto las decisiones sobre la asignación de recursos de estos hogares.

Introduction

The vast majority of economic models of the household treat it as a single unit. This amounts to assuming either that all household members share the same preferences or that one member, a dictator, determines all allocations. Since the theory of consumer demand is predicated on the notion that preferences are an individual trait, this is not an appealing restriction. Not only is it difficult to meaningfully discuss important phenomena like marriage and divorce in the context of this model but a body of empirical evidence has emerged in the last few years suggesting that the restrictions of this "unitary" model of the household is at odds not just with common sense but also with the data. (See, for example, Samuelson, 1956, and Becker, 1974, 1981, for discussions of the general issues; Bergstrom, 1997, provides a recent review.)

These empirical studies suggest that, ceteris paribus, as a woman's "power" within the household increases relative to that of a man, household consumption and time allocation patterns change, with, for example, some studies indicating that more resources are allocated to investments in children. From an empirical point of view, a central stumbling block in this literature has been identifying sources of "power" that vary exogenously.

Most of the studies have examined the impact on allocation decisions of changes in the distribution of income within the household. Since time allocation and, therefore, labor supply is one of the choices over which a couple is likely to bargain, it is difficult to argue that labor income should be treated as exogenous in this context. (See, for example, Browning, Bourguignon, Chiappori and Lechene, 1994.) Nonlabor (or asset) income is similarly suspect if it reflects the cumulation of saved prior labor income (Schultz, 1990; Thomas, 1990). Thomas, Contreras and Frankenberg (1997) use assets that a couple owned at the time they were married which reduces, but does not eliminate, this source of endogeneity.

An alternative to using income of household members to capture "power" would be to use characteristics of the local community or environment. McElroy (1990) discusses the role of options outside the marriage including opportunities in the re-marriage market and suggests, for example, sex ratios or changes in divorce laws across states (Carlin, 1991). In a very innovative study, Lundberg, Pollak and Wales (1997) utilize a natural experiment provided by a shift in the U.K. welfare system in the late 1970s. All families in the U.K. are eligible for child benefit. Prior to 1977, it was paid through the tax system as a deduction from income tax and, typically, accrued to the father. Legislation in the House of Commons replaced that deduction with a cash payment paid to the mother. Women's power was unambiguously increased. Lundberg, Pollak and Wales show that there was a coincident change in expenditure patterns: relative to men's clothing, expenditures

on women's and children's clothing increased. They conclude that the shift in power within the household did affect resource allocation. (See, also, Ward-Batts, 1997.)

Aid to Families with Dependent Children, AFDC, was, until recently, a central component of welfare policy in the U.S. The benefit was paid only to single women with children. Conditional on family size, the payment is set at the state level and varies, in real terms, over time. Putting aside migration because of the level of payment and fertility choices in response to the payment, the benefit schedule a woman faces may be treated as exogenous. Under these assumptions, inter-state and inter-temporal variation in the benefit has been used as a "natural experiment" in a very large number of studies. See, for example, Moffitt (1992) for a comprehensive review of the disincentive effects of AFDC and Moffitt (1996) for an assessment of the assumptions underlying several of these "natural experiments".

Following the lead of Lundberg, Pollak and Wales (1997), AFDC also provides a potentially powerful tool for testing the unitary model of the household within the context of a "natural experiment". Specifically, the AFDC benefit level provides a natural fall-back for a low-income woman with children who is contemplating separation from her partner. As AFDC payments increase, separation will become more attractive and, we conjecture, the relative bargaining power of the woman in a household should also increase. If this is true, and if bargaining power does affect allocation decisions within the household, then the AFDC benefit level should affect household choices in intact families.[1]

This hypothesis is tested using longitudinal household survey data from the Panel Study of Income Dynamics (PSID) over the period 1968 through 1992. While attention is focussed on the share of household income spent on food, we also report empirical results for time allocation of working couples. We examine the impact on these outcomes of variation, over a quarter of a century, in the AFDC maximum benefits that would be paid to a family of one adult and two children. Careful attention is paid to unobserved heterogeneity. It is standard in the "natural experiment" literature to control for state fixed effects and allow time effects to vary non-parametrically. We take two more steps. First, a household fixed effect in the models sweeps out all unobserved factors that are fixed and additive at the household level and which might affect household allocation patterns. There may, however, be factors that vary over time and within states which are not captured in these models. Our second step, therefore, is to compare households in which mothers are likely to benefit from AFDC payments should they separate from their husbands with households for whom AFDC is not likely to play a role. First, AFDC

[1]The influence of AFDC on living arrangements has been investigated by Ellwood and Bane (1985) who set out the descriptive facts, Hoynes (1995) who uses a "natural experiment" framework and Hu (1997) who exploits a treatment-control randomized experiment. They all conclude that increases in generosity are associated with a (fairly small) reduction in the probability a women is married to or cohabits with a man. In order to sidestep this issue, we focus on intact couples. If AFDC only affects living arrangements and has no impact on bargaining power within the household, then our tests will result in failure to reject the unitary model of the household.

is only paid to single mothers with children and so the behavior of households that contain young children are contrasted with similar households that do not. Second, AFDC is unlikely to be a source of bargaining power in higher income households and so the behavior of lower income households with young children is compared with higher income households with young children.

The results indicate that households with young children, and particularly lower income households with young children, tend to allocate less of their income to food as AFDC generosity increases. Our view is that the most plausible explanation for the results is that as AFDC benefits rise, the bargaining power of women in these households increases which, in turn, affects the share of income spent on food. Time allocation patterns are consistent with this interpretation. Among households with young children, hours in the labor market for women decline as AFDC rises; men's hours also decline but by a much smaller amount and so the woman's share of the couple's time in the labor market is significantly reduced as AFDC generosity increases.

Corroborating evidence is drawn from the Consumer Expenditure Survey (CEX) which is a series of cross-section household budget surveys conducted annually in the United States. While the long panel dimension of the PSID is a key advantage for this study, contrasting families that include young children with families that do not in the CEX provides an independent check on the robustness of the results. Consistent with results from the PSID, as AFDC generosity increases, the share of the budget spent on food declines. Similarly, the share on what might be construed as "male" goods (alcohol, car maintenance, sports entertainment) declines while the share allocated to "child" goods (toys, baby clothing and baby furniture) and health increases. We conclude that options outside the marriage, as indicated by the generosity of AFDC benefits, do affect the bargaining power of women within the marriage as manifest in household resource allocation decisions.

The model underlying our tests are presented in the next section. It is followed, in Section 3, by a discussion of the data and some empirical issues. Regression results, presented in Section 4, are followed by a concluding section.

Model

We begin with a standard model of household behavior in which household welfare in any period, W, depends on the utility of each member, m = 1, ..., M. In turn, each individual's utility function, Um, depends on the commodity consumption of all household members, x_{gm} , g=1, ..., G, where g indexes goods and consumption of leisure of each individual is denoted x_{0m}. Individual and household specific characteristics may affect tastes and therefore utility. Let μ denote those that are observable and let μ represent all unobservable characteristics, such as tastes for work, for consumption and for investing in children. Each individual's sub-utility function is given by $U_m(x; \mu , \varepsilon)$ which is assumed to be quasi-concave, non-

decreasing and strictly increasing in at least one argument. The household welfare function aggregates these individual sub-utility functions:

$$W = W[U_1(x; \mu, \varepsilon), \ldots U_M(x; \mu, \varepsilon)] \quad [1]$$

which is maximized subject to the household budget constraint:

$$p x - \Sigma_m [p_{0m}(T-x_{0m}) + y_m] + y_0 \quad [2]$$

Prices, p, of all elements of the vector X are assumed to be parametric apart from p_{0m}, the price of time (wage) of individual m. The income of member m is the value of earned income $p_{0m}(T-x_{0m})$ plus non-labor income, y_m, and y_0 is all income that is held jointly by household members.

Unitary model of the household

The simplest (and most common) economic model of the household implicitly assumes that all household members have exactly the same preferences, so the sub-utility functions, U in [1], are identical. An alternative assumption that has been suggested is that there is one member, a *dictator*, who makes all allocation decisions. Under this assumption, the aggregator function W(.) in [1] assigns a zero weight to all but that member's utility function. For our purposes, the two assumptions are observationally equivalent as they both imply that the household may be treated as if it were a single unit. That is, the notion of power within the household has no place in this model and demand depends only on prices, total household income, $\Sigma_{m=0}^{M} y_m$, and household characteristics, μ, such as demographic composition:

$$x_g = x_g (\Sigma_{m=0}^{M} y_m, \mu, p, , \upsilon_g) \quad [3.1]$$

Individualistic models of the household

An alternative class of models that have gained currency in the literature in recent years treats the individual as the primary element in household decision-making. Although there are several variants of these models, their implications are, for our purposes, similar.

For example, following Chiappori (1988, 1992, 1993), if we were to assume that resources are allocated within the household (*Pareto*) *efficiently*, there exists some λ so that the household optimization program is

$$\text{Max} \Sigma_m^M \lambda^m U^m (x_{gm}, \ldots, x_{gM}; \mu, \varepsilon) \quad [4]$$

subject to the budget constraint [2] where household consumption of good g is $\Sigma_m x_{gm}$ (Chiappori, 1992).[2]

The household may be treated as if it were a single unit maximizing a weighted sum of all individual felicity functions, U^m, where the weights, λ, sum to unity. The reduced form demand functions depend on household income, $\Sigma_m^M y_m$, observable household characteristics, μ, prices, p, *and* the vector of weights, λ:

$$x_g = x_g(\Sigma_m^M y_m, \mu, p, \lambda, \xi_g) \qquad [3.2]$$

where ξ represents unobserved heterogeneity in tastes. Apart from the weighting factors, λ, the demand functions in the individualistic model, [3.2], are identical to those under the assumptions of the *unitary* model, [3.1]. Presumably the weighting factors are a measure of the importance of each member's preferences with regard to the household's allocation choices.

It is helpful at this point to provide additional intuition about the weights, λ, by slightly re-interpreting the individualistic model in terms of a model of income pooling (Chiappori, 1992). If allocations are Pareto efficient, then the optimization program can be rewritten as a two stage process. In the first stage, the household may be treated as if all members pool their income and then re-allocate it among themselves according to some sharing rule. Thereupon, in the second stage, each household member maximizes his (her) own utility given his (her) income share. The income sharing rule is clearly related to the weights, λ. The rule also has a very nice intuitive interpretation as an indicator of relative bargaining power of household members: the more powerful the individual, the bigger that person's share of the pie in the first stage.

Since the seminal work by McElroy and Horney (1980) and Manser and Brown (1980), a large number of bargaining-type models of household allocations have been suggested in the literature.[3] In their simplest form, these models suggest that each individual spends the income over which he or she has control without reference to other members and then looks at the equilibrium (if any exists); a slightly more sophisticated model repeats this process until achieving an equilibrium. This suggests that household allocation decisions are the outcome of a bargaining process in which members seek to allocate resources towards goods they especially care about. In the absence of asymmetric information, all outcomes of co-operative bargaining decision rules will be Pareto efficient and so those models yield demand functions which are a special case of [3.2] above. While asymmetric information and non co-operative behavior complicates these models, the basic intuition underlying the models remains.

[2]For simplicity, we assume all consumption is private. This may not be unreasonable in the context of our empirical results below which are based on food expenditures and the allocation of time to the labor market.

[3]See, for example, Bjorn and Vuong (1984, 1985), Lundberg and Pollak (1993), Ulph (1988).

Each household member has some fall-back position (level of utility) and will exit the household if her (his) welfare falls below the "threat point" level. If the sum of utilities associated with the fall-back positions is less than total household welfare, the household will dissolve. Utility over and above the sum of the individuals' threat points is shared among household members presumably in accordance with their bargaining strength. To fix ideas, assume a co-operative Nash equilibrium (McElroy and Horney, 1980). The M household members involved in decision-making choose allocations of resources to maximize the product of the differences between the utility each achieves, U, and the threat point or reservation utility level, V, which is the utility the individual would achieve outside the household:

$$\Pi_{m=1}^{M} U(x;\mu,\varepsilon) - V_m(p;\bar{\mu})$$

Reservation utility depends on prices and those characteristics, $\bar{\mu}$, which affect one's ability to assert one's preferences in the bargaining game.

Clearly these characteristics will also enter the demand functions and so, in terms of the functions [3.2], the weights, λ, will depend on $\bar{\mu}$. This is because the weights reflect the relative importance of a member's utility in the household optimization program [4] or, put another way, the weights influence the share of the income pie that a household member controls. They are, therefore, a measure of power within the household and will also depend on prices, household characteristics and the distribution of income within the household. Making this explicit, we rewrite the demand function:

$$x_g = x_g\left(\Sigma_0^M y_m,\ \mu,\ p,\ \lambda(\bar{\mu}, y_0, y_1, \ldots y_m,\ \mu, p),\ \xi_g\right) \qquad [3.3]$$

Substituting for the weights yields:

$$x_g = x_g\left(\Sigma_0^M y_m,\ \mu,\ p, y_0, y_1, \ldots y_m,\ \bar{\mu},\ \xi_g\right) \qquad [3.4]$$

Comparing [3.4] with demand under the unitary model, [3.1] suggests a simple test of the unitary model against a wide class of alternatives: if the unitary model is correct, measures of power, $\bar{\mu}$, should have no impact on household resource allocations.

It remains to specify empirically implementable indicators of bargaining power. McElroy (1990) suggests including the environment an individual would face upon withdrawing from the household which she calls extra-environmental parameters. These might include an individual's labor market opportunities, re-marriage market opportunities, social and family support as well as the resources that the individual would control if the household were to dissolve. This last insight has been exploited by Carlin (1992) who treats changes in divorce settlement laws at different times in different states in the U.S. as a "natural experiment" and notes that those changes in laws will affect the way household resources are split when

families dissolve. They should, therefore, affect the power a person wields in the household.

Following the same logic, prior to the 1996 Welfare Reforms, Aid for Families with Dependent Children (AFDC) was a central element of the U.S. public support for the poor. Single mothers with young children were eligible for AFDC as long as their income and assets fell below the cut-off. The benefit provides a natural fallback position for a woman who would be eligible for AFDC if she separated from her partner. Thus, under the assumptions of the individualistic models, AFDC should enter the reservation utility, V, of these women since it would be an element of . $\bar{\pi}$ As indicated by [3.4], the potential AFDC benefit will affect resource allocation, holding household income constant. The key point is that it is not the receipt of AFDC income that matters for this test, but rather the potential receipt of that income; our main empirical analyses are, therefore, based only on intact couples who have not received any AFDC income.[4]

In the regressions below, AFDC benefits will be treated as parametric from the point of view of a couple which implies we need to make two assumptions. First, AFDC benefits vary with the number of children in the family unit. A woman may respond to this fact through her fertility choices in which case the state-level AFDC benefit should be treated as endogenous. It strikes us as very unlikely that the potential of receiving AFDC would have a substantial impact on a couple's decision to have more or less children, which must rank among the most serious choices a couple make. The second source of endogeneity arises from the fact that AFDC benefits vary across states. A woman may increase the potential AFDC payment she would receive (her bargaining power) by moving to a more generous state. The empirical evidence on welfare magnets suggests there is a very small (but significant) impact of generosity on the mobility of single mothers (Walker, 1994); the impact on couples (for whom moving is more costly) is almost surely even smaller in magnitude. In the regressions below, we will provide some evidence to assess the empirical importance of migration. Before presenting the regression results, the data are discussed in the next section.

[4]While, in recent years, states have had the option of covering married couples if the head works less than 100 hours per month, under the AFDC-Unemployed Parent (UP) program, that program is small and accounts for a very small fraction of the AFDC caseload. There is some variation across states in the treatment of unrelated cohabitors and step-fathers who are in households that contain AFDC assistance units. (Moffit, Reville & Winkler, 1993). A woman and her children may be eligible for AFDC even if she cohabits with a man. The same is true in most states for step-fathers although some states treat step-fathers in the same way the biological father is treated so they are eligible only for AFDC-UP. In order to ensure that AFDC-UP families are not included in our sample, we exclude all households who have received AFDC income during any of the survey years.

Data

Our measure of "power" within the household is the AFDC a woman could receive if she separated from her partner. Combining information from the Office of Family Assistance, Administration for Children and Families of the U.S. Department of Health and Human Services with statistics published by the Congressional Research Service, U.S. House of Representatives, we have created a state-specific time series of the Maximum AFDC monthly benefit that would be paid to a woman with two children over the period 1968 through 1992. The mean and standard deviation for each state is presented in Figure 1 (in real (1984) dollars). The mean monthly maximum benefit for the country as a whole is about $290. States in the South tend to be the least generous, whereas those in the West are among the most generous. In general, higher benefit states have also tended to have higher variance although California and Alaska present a stark contrast. Both are among the most generous states; however, while Alaska is also one of the most variable, benefits in California have been remarkably stable in real terms over this period.

These data have been merged with our household-level data sources, the Panel Survey of Income Dynamics (PSID), an on-going longitudinal survey, and the Consumer Expenditure Survey (CEX), a series of cross-sections. The PSID follows members of households that were first interviewed in 1968, including those who have subsequently split-off from the original sample household. To test hypotheses about the role of bargaining power in household decision-making, we focus on intact couples throughout our analysis. To avoid contamination of the tests associated with receipt of AFDC, we exclude all couples who report receiving AFDC in any year that they appear in the survey. This forms our core sample of 8,506 couples who, on average, appear in the survey slightly more than six times each, yielding an effective sample size of 54,010 household-years. Summary statistics are reported in Appendix Table 1.

While the PSID contains extensive information about income, labor supply choices and demographic characteristics, only limited data are collected on consumption. We focus on food expenditures reported by the household including the value of food stamps and the value of food eaten out of the home. Food expenditures tend to rise with income and, as an empirical matter, it is convenient to estimate Engel curves in terms of shares. Food shares, the ratio of food expenditures to household income, tend to decline with income. The average household spends about 18% of its income on food; around one-sixth of that is spent out of the home. There is considerable heterogeneity in food shares: they account for more than a third of the budget for almost 10% of the observations and are less than one-fifteenth of the budget for another 10%.

Figure 2 displays mean food shares for each year of the survey: while far from monotonic, food shares have tended to decline over time largely reflecting growth in household income. At the same time, the average generosity of AFDC

benefits that the sample households faced has also declined. It would be premature to impute a causal interpretation to this correlation: it is far more likely that it is due to unobserved heterogeneity that is common to both processes. In fact, unobserved heterogeneity is a serious concern in any study of state-level treatment effects on household-level behavior and is a grave concern for us. To be concrete, we rewrite the model [3.4] in linear form

$$\omega_{ist} = \beta_0 + \beta_1 \mu_{st} + X_{ist}\gamma + \xi_t + \xi_s + \xi_i + \xi_{ist} \qquad [5]$$

where ω_{ist} is the food share of household i, living in state s at time t. AFDC maximum benefits, μ_{st}, vary across states and time and X_{ist} captures all other household and community-level observable characteristics including income, demographics, and measures of local economic activity. We assume unobservables in the model comprise four elements. First, in order to capture the variation across time that is observed in Figure 2, we allow food shares to vary with time and include a dummy for each year of the survey, ξ_t. This time fixed effect will sweep out any economy-wide changes (such as growth) that might affect both food shares and AFDC benefits. Food shares are likely to vary with relative prices, climate and levels of infrastructure which differ across states. Thus, the model includes state fixed effects, ξ_S.

Since economic growth is not uniform across the entire country and since the characteristics of states change over time, one would, in principle, like to include state-specific time fixed effects. That, however, would sweep out all variation in AFDC benefits, μ_{st}. We address this concern in three ways.

First, state-specific time trends are included in the model along with region-specific time effects (for four regions in the U.S.) Thus, estimates of $\beta 1$ may be interpreted as the effect of deviations from the average rate of change in AFDC benefits for a particular state, controlling for all region-specific year-to-year changes.

Second, the model contains a household fixed effect which will sweep out all household-level unobserved heterogeneity that is correlated with both AFDC generosity and food shares. This includes, for example, taste differences that are associated with locational choice (or relative prices) and household resource allocation.[5]

It is plausible, however, that there remain common unobserved factors that influence both AFDC generosity and household food shares. These might include, for example, local labor market conditions for people in the lower tail of the income distribution. Assume that state administrations respond to worsening labor market opportunities for the poorest by increasing the generosity of AFDC. If, at the same

[5]As indicated in Appendix Table 1, even after sweeping out household fixed effects, there is substantial variation in both food shares and AFDC benefits. In the data, the standard deviation of food shares is 0.16; within households, the standard deviation is 0.10. Similarly, the standard deviation in ln AFDC benefits is 0.50; excluding all inter-household variation, the standard deviation is 0.20.

time, household incomes decline and food shares rise, we will observe a spurious positive correlation between AFDC benefit and food shares. (Of course, if legislators respond to a worse labor market and thus increased demand for AFDC by decreasing benefits, we would observe a spurious negative correlation.)

This is addressed by our third approach to minimizing biases due to unobserved heterogeneity in which we slightly recast the "natural experiment" and compare the behavior of households that have young children with households that do not. Since AFDC is paid only to women with children, its generosity should have no effect on the bargaining power of women with no children. Holding income and education constant, the labor market opportunities faced by women with and without children should not differ in a way that is systematically related to unobservables that affect AFDC generosity and food shares. Thus, the interaction between AFDC generosity and the presence of young children, κ, provides a relatively robust means of testing for the influence of bargaining power on household allocations.

$$\omega_{ist} = \beta_0 + \beta_1 \mu_{st} + \beta_2 \mu_{st}*\kappa + X_{ist}\gamma + \xi_t + \xi_s + \xi_i + \xi_{ist} \qquad [6]$$

While we will present estimates of β_1 in the regressions below, we have greater confidence in estimates of β_2 as the basis for testing the unitary model of the household and will, therefore, rely more heavily on those estimates.

Since demographic controls are included in the covariates X_{ist}, differences between children and adults in food intensity will be captured by those controls. The interaction between AFDC generosity and the presence of young children should not be thus impacted. It is possible, however, that the costs of children vary across states and over time and that these differences are correlated with AFDC generosity, thereby contaminating our tests. We will address this concern by contrasting the effect of AFDC on food shares in lower income households who have young children with higher income households with the same demographic characteristics. Since women living in higher income households are unlikely to be eligible for AFDC, changes in its generosity should have no effect on their bargaining power and, therefore, on resource allocation within their households.

The results based on PSID are cross-validated drawing on the CEX which, in contrast with the PSID, does not contain interviews with the same households stretching over many years. Thus, model [6] is estimated using the CEX without a household fixed effect. As discussed above, the likely presence of household-level unobserved heterogeneity contaminates interpretation of the effect of AFDC generosity on expenditure shares, even after including state and year fixed effects. The differential effect of AFDC generosity on families with young children relative to families who face the same level of AFDC generosity, but do not have young children, β_2, is less prone to this concern -- and so we focus on those estimates. They are not, however, immune to bias due to unobserved heterogeneity and so we will present estimates for lower income and higher income households. The variation of β_2 across the income distribution will provide a further check on the

interpretation of the results. Because of concern with unobserved heterogeneity, we view results based on the CEX as suggestive.

Regression results are presented in the next section. We begin with PSID and discuss food shares as well as time allocation patterns of husbands and wives. We then present corroborating evidence from the CEX.

REGRESSION RESULTS

Food shares and AFDC generosity

Table 1 reports estimates of the food share Engel curve [6] using our core PSID sample of 8,506 intact couples who have at least one child under 18 in the year of the survey. Each regression contains controls for family and household characteristics including demographic composition, age and education of the head and spouse, household income and controls for local levels of economic activity.[6] The empirical specification is a simple generalization of the Working-Leser form (allowing a flexible form for the effect of household income). Variance-covariance estimates are based on the infinitesimal jackknife allowing within state and year correlations in errors (Huber, 1967).

The first column of Panel A presents OLS estimates of the correlation between state-level AFDC payments and the share of income spent on food. As noted above, and clearly depicted in Figure 2, there is a powerful positive association between the two. This correlation, however, is to all intents and purposes explained by time effects (in column 2) or state effects (in column 3). After including those controls, there is no evidence that variation in AFDC generosity has any impact on food shares.

The second through fourth rows of Panel A allow the effect of AFDC to vary with presence of children in the family. *Ceteris paribus*, a woman with young children will be eligible for AFDC for longer than a woman whose children are older. Thus, if AFDC does affect a woman's bargaining power, it should have a bigger impact when the mother has young children. This hypothesis is supported in the data. Whether or not the model includes controls for time effects, state effects or both, a 10% increase in the AFDC benefit is associated with about a 3% reduction

[6]The regressions include controls for the number of children in the family age 0 to 6, age 7 to 12 and age 13 to 18, the number of male adults, the number of female adults and the (log of the) number of members in the household, including non-family members. The age and education of the head and spouse are included along with household income which is specified in logarithmic form as a spline with knots at the lower and upper quartile. As an additional measure of wealth, we control the (cubic root of the) value of the house for owner-occupiers. State level *per capita* personal income and county unemployment rates are included to capture unmeasured heterogeneity in local labor markets.

in the share of income allocated to food if the woman has young children (age 0 through 5). The effect is smaller if the children are age 6 through 11 (0.8%) and there is no significant effect if the children are older.[7]

The fixed effects regressions in column 4 contain extensive controls for heterogeneity across states and time since we include state fixed effects, time effects, state specific time trends and region specific time effects. Nevertheless it is plausible to suppose that this does not control for all unobserved heterogeneity that may affect family allocation choices. For example, if within a state, labor market opportunities for the poorest do not change in lock-step with opportunities for higher income earners, and if AFDC benefits (which are targeted at the poor) vary as these labor market opportunities diverge, then changes in the generosity of AFDC may reflect this divergence of economic opportunities and have nothing to do with bargaining power within the family. Similar concerns may arise if labor market opportunities for (poorer) women differ from the average worker in the state. This concern is addressed in the regression in column 5 of the table which contains a fixed effect for each of the 8,506 couples in the study. The model in column 6 also includes the state and time effects controlled above. This final specification probably errs on the side of conservatism as it sweeps out all fixed characteristics at the *household* level that might be associated with the state-specific level of generosity of AFDC benefits. This includes variation in the household's attachment to the labor market.[8]

Two main results emerge. First, increases in AFDC are associated with higher food shares when family effects are controlled. However, paralleling the results in columns 1 and 2, (and Figure 2), this reflects the fact that AFDC and food shares have declined over time. In the conservative specification with time and state effects, the impact of AFDC turns negative and is measured very imprecisely. We note that while the inclusion of time effects is key, whether or not the model contains state effects has no impact on the estimates. Thus, migration by households in response to AFDC generosity does not seem to be an important concern in this context. (See, for example, Walker, 1994).

Second, increases in the generosity of AFDC benefits have no impact on the share of income allocated to food if there are older children (age 6 through 18) in the household. However, AFDC generosity is associated with a significantly lower food share if the household has young children. Whereas the estimated coefficient on this interaction is reduced by half when a family fixed effect is added to the model, it hardly changes when state or time effects are also included. Moreover, the

[7]The time effects in column 2 and the state effects in column 3 are significant (F statistics are 35.3 and 27.9, respectively). They are also jointly significant in column 4 (F statistic is 12.8).

[8]The household fixed effect is significant in both columns 5 and 6 (F statistics are 4.3 and 4.8 respectively). The state and time effects remain significant even after controlling for household fixed effects in column 6. (F statistic is 25.9 for time effects and 6.9 for state effects.)

estimated effect is invariant to whether or not interactions between AFDC and children of other age groups are included in the model.

Thus, relying on the impact of AFDC generosity on food shares to test the unitary model yields conflicting results and depends critically on whether or not one makes the assumption that unobserved heterogeneity in the model is fully captured by our set of state and time effects. While this is a standard assumption in the literature, we take the view that it is too strong, at least in this application. However, allowing the treatment effect to differ across households, within a state and time period, and focussing on those households who are likely to be most affected by changes in AFDC, we find unambiguous evidence that changes in the state-level generosity of AFDC payments does impact food shares in families with young children.[9]

Robustness tests

Table 2 explores the robustness of these inferences. Columns 1 and 2 repeat the regression in column 6 of Table 1. Consistent with Engel's first law, food shares decline as income increases albeit at a decreasing rate. Consistent with Engel's second law, conditional on income, food shares rise as household size increases although we see that this effect is somewhat mitigated by the addition of female adults. Whether this is because they are less intensive in food, whether it is because more female adults implies more home production (less food out of the home), or whether it reflects changes in bargaining power of the mother, we cannot say.

If our interpretation is correct, AFDC payments should have no impact on food shares in households with no young children. This implication is tested in column 3 which is based on a different sub-sample of families in the PSID. We include only those households who have no children under 18 in the year of the survey or at any time in the following two years; the latter restriction ensures that we exclude those who are most likely to be planning children since AFDC generosity may affect the bargaining of women in those households. Consistent with our interpretation, the impact of variation in AFDC generosity on food shares in households with no children is zero.[10]

A potentially more powerful test is based on the observation that AFDC benefits should not only have a bigger effect on the power of women in households with small children but it should also have a bigger effect on women in lower

[9]Given the large sample sizes, it may be appropriate to adopt a Bayesian approach to model selection. Following Schwarz (1978), the *a posteriori* most likely model will be chosen if a t statistic greater than 3.4 is judged significant in the regressions in the table. By this criterion, apart from the OLS estimates, the only significant coefficients in the table are the interaction between the AFDC benefit and the presence of young children.

[10]Although it is not precisely estimated in the first two columns, the magnitude in the third column is 1/10th the size in the first two columns.

income households. Households are stratified into three groups based on their *per capita* income level. To control for price variation across states, we compare household income with the corresponding *per capita* AFDC benefit for a family of three in their state of residence. Low income households (those whose income is less than three times the AFDC benefit) spend a lower share of their income on food as the AFDC benefit increases and this effect is largest for those households with young children. The impact for middle income households is considerably attenuated although it remains significant among those households with young children. Food shares of higher income households are unaffected by the AFDC benefit.

It is possible that the direct effect of AFDC on food shares among low income households reflects unobserved heterogeneity (in labor markets for the poor, say). It is difficult to see how this can explain the significance of the interactive effect with young children. That explanation can be directly tested by re-estimating the model in column 3 with a sample of couples with no children (a regression that is analogous to the one reported in column 3). If unobserved heterogeneity is contaminating the results, AFDC should affect the food shares of these households. It does not. (The t statistic on ln(AFDC benefit) for low income households is 0.9 and for middle income households it is 1.1.)

In the last two columns of the table, households are stratified according to a longer run measure of income (wealth): whether or not the household owns a home. Women living in households who own a home in every year of the survey are very unlikely to be eligible for AFDC if only because they are unlikely to satisfy the asset conditions. AFDC should have no impact on food shares in these households, even if there are young children present. The evidence is consistent with this interpretation.

Table 3 explores robustness in a different direction. Our dependent variable is the share of income spent on food: both income and expenditure are prone to measurement error and we have several cases of food expenditures that are in excess of reported income. The model in column 2 has been re-estimated with four different estimators that reduce the influence of outliers in food shares. The first two columns are trimmed least squares regressions (including fixed effects). The third regression is a median regression which is an L-type estimators and has a very high breakdown point. The fourth regression is an M-estimator and is a Huber-type robust regression with a biweight weighting function. The results are very similar in all cases and support the conclusions based on Table 2: higher AFDC benefits do affect food shares in intact households with young children.

We conclude, therefore, that the evidence suggests AFDC does affect power of women in lower income households with young children and this increased power is manifest in a reduction in the share of income allocated to food. PSID does not contain much information on other expenditures; below, we will present evidence from CEX using a broader set of expenditures. It is, however, possible to examine

the link between AFDC benefit and time allocation with the PSID. The results are presented in Table 4.

Time allocation and AFDC generosity

The analysis is restricted to those couples who both work in the labor market. In the first column, we repeat our main food share regression using this restricted sample. While the impact of AFDC on food shares among couples with young children is smaller than in the full sample, it remains significant.

The second and third columns indicate that hours of work increase for both men and women as AFDC benefits rise. Given with the discussion above, we are reluctant to interpret this as a "natural experiment" associated with changes in bargaining power within the household; rather we suspect that it reflects a correlation between state-level generosity and economic performance. Note also that the impact is substantially larger for female labor supply (and therefore for the woman's share of the hours the couple work, column 4), indicating that AFDC generosity varies with labor market choices and, particularly, those of women. However, the interaction between AFDC benefit and the presence of young children in the household is unlikely to be subject to concern regarding contamination of this sort. We find that this interaction has a negative and significant impact on women's hours, no impact on men's hours and, therefore, is associated with a reduction in her share of the couple's hours of work. We conclude that as a woman's bargaining power increases, she reduces her share of time allocated to earning income.

Of course, as has been noted in many studies, the presence of young children in the household is associated with a reduction in hours of work by women (Mroz, 1984). Hours worked by men are also reduced but by not as much and so the share contributed by women also falls. This is normally attributed to an increase in child care activities by the mother. As expected, her share of time in the labor market increases dramatically when the children are older. These direct effects of demographics suggest an interpretation of our result. As AFDC generosity rises, a woman's bargaining power increases if she has young children and she allocates more of her time to looking after those children. Neither she nor her husband will benefit from the more generous AFDC payments and so this is unlikely to capture a wealth effect unless they are anticipating divorce. Moreover, if it does reflect a wealth effect, we would expect to see a decline in the husband's hours of work as benefits increase (and we do not). We would also expect the interactions between AFDC and the presence of older children to be significant. They are not significant in any of the models that include these interactions.

Delving inside the "natural experiment"

We have, thus far, compared those families with young children who are treated with higher levels of AFDC with those families for whom AFDC remains constant under the assumption that it provides a "natural experiment". There are many ways that this assumption can be tested (see, for example, Heckman and Robb, 1988, for a general discussion). For example, the estimated coefficients should be the same for any pair of states in a cross-section or for any pair of time periods in a time series. In practice, however, these tests will lack power in our context because of the limited variation in AFDC benefits in each case. However, we have explored the empirical basis of our "natural experiment" by stratifying the sample into regions and re-estimating the food share models separately for each region. Coefficient estimates are reported in Table 5.

The effect of the AFDC benefit is in Panel A. The estimates are similar in all four regions but, since their associated standard errors are about twice the size of the coefficient, none of the effects is different from zero and none is different from each other. This test has no power.

Panel B reports the estimated effects of the interaction between AFDC and having young children in the household. The effect is significantly different from zero in each of the four regions and, taking all four regions, we cannot reject the hypothesis that the effects are the same (row 4). For all but one of the pairs, the estimated effects are the same: the exceptional case is the comparison between the North Central and West regions.

It turns out that this difference among the regions emerges only in the late 1980s and early 1990s. Re-estimating the model on a slightly reduced sample of twenty years of data (1968-87), we find that none of the pairs of coefficients is significantly different (Panel C). Apparently, during 1988-1992, the impact of AFDC on food shares of families with young children increased slightly in the North Central U.S. but fell substantially in the West. Precisely why is unclear although Figure 3 presents some suggestive evidence. As in Figure 2, median AFDC payments and mean food shares are displayed by year for each region. In the Northeast and North Central states, food shares and AFDC track each very closely. In the South, food shares have declined substantially more than AFDC payments over the period. The link is least clear in the West where, in contrast with the rest of the country, food shares rose almost 2 percentage points in the last five years of the study.

While the departure from equality of effects across regions in these latter years is a concern, the key issue, here, is whether the conclusions above are affected by this departure. Re-estimating all the models on a reduced sample that excludes the North Central and Western states for the period 1988 to 1992 provides the answer: a resounding negative. For example, the impact of a percentage increase in AFDC is a 0.157% decline in food shares of households with young children. (The standard error is 0.03, the same as in the full sample). As a second example, the

impact is larger on poorer households: the coefficient on the AFDC-young child interaction is -0.356 (standard error–0.13) for households with income less than 3 times the AFDC payment.

Corroborating evidence from the CEX

As a final set of checks on the robustness and plausibility of our results, we turn to the CEX which has the advantage of containing information on a broader array of goods than PSID. Drawing on 14 rounds of the survey spanning 1980 through 1994,[11] we have estimated Working-Leser Engel curves of the form [6] but, because the CEX is not a panel of households followed for many years, the models do not include a household fixed effect. As discussed above, failure to control household-level unobserved heterogeneity complicates the interpretation of the correlation between AFDC generosity and budget allocation. If AFDC is a source of bargaining power, its effect on the budget should be greatest in households with young children since their mothers have a longer time horizon over which they will likely receive AFDC. We will, therefore, contrast spending patterns of households in the same state, in the same year, with the same level of expenditure and the same household size and examine the differential effect of variation in AFDC generosity on "treatment" families -- those with young children -- relative to "control" families -- those without any young children. That is, we focus on $\beta 2$ in [6], the interaction between AFDC generosity and the presence of young children in the household.

Estimates are reported in the first column of Table 6. Since the effect of AFDC generosity should be greater among lower income households (with young children), column 2 reports estimates of $\beta 2$ among lower expenditure households (below median per capita expenditure in the year of the survey); estimates for higher expenditure households are in column 3.[12]

Our primary goal is to assess the robustness of the PSID results. We begin, therefore, with food shares and restrict attention to a subset of other goods that are intended to shed some light on the mechanisms through which bargaining power might affect budget allocations. Specifically, we examine the share of the budget spent on food out of the home, two "male" goods (alcohol and a composite of expenditures on leisure items including sports entertainment, tools, car maintenance and gas) a composite "child" good (baby clothing, baby furniture and toys) and a

[11]Expenditure data, which are collected from each household four times, are aggregated to create an estimate of annual expenditure; each household therefore enters our analytic sample once.

[12]With PSID, we exploited the fact that it is possible to calculate longer run measures of income and household resources in order to isolate women and children who are more likely to benefit from AFDC. That is not possible with CEX. We therefore split households at median *per capita* expenditure but recognize there is likely to be classification error in terms of identifying women and their children who are likely to have few resources if the husband and wife were to split up. For reference, median household expenditure is around nine times average AFDC payment.

"human capital investment" good (health).[13] The advantage of aggregating goods into commodity groups is that we are able to mitigate the difficulties that arise when some households spend nothing on a good.[14] Nonetheless, for some of these commodities, such as alcohol, the decision to buy the good at all might be influenced by bargaining power. This potential pathway of influence is explored in columns 4-6 in the table: the estimates are based on a linear probability model of the decision to spend anything on the good for all households (column 4), lower expenditure households (column 5) and higher expenditure households (column 6). The final two columns report the budget share and fraction of households who report any purchase during the reference period.[15]

Results for food shares are presented in the first row of the table. Consistent with evidence in the PSID, food shares in households with young children tend to decline as AFDC generosity increases. This negative effect is greater among lower expenditure households and is effectively zero among the better off. The coefficient estimate for the full sample is lower than in the PSID but, among lower income households, the CEX and PSID estimates are very close.

Why is AFDC generosity associated with reduced food shares in PSID and CEX? To explore this question, the effect of AFDC generosity on the share of the spent on food out of the home is reported in the second row. In households with a young child, the share declines as generosity increases, particularly among lower expenditure households. Apparently all the decline in food shares can be explained by a reduction in the allocation of the budget to food out of the home.

The probability anything is spent on food out of the home also declines with AFDC generosity and that effect is much larger for the less well-off. The fact that the estimated effect is significant among higher expenditure households calls for caution in the interpretation of the result. We suspect that this is a reflection of the same fact reported in Table 1 which demonstrated that failure to include household-specific fixed effects yields estimates of $\beta 2$ that are contaminated by unobserved heterogeneity. It is apparent from these results why we have focussed primarily on the PSID. Nonetheless, to the extent that the impact of the unobserved heterogeneity does not vary across the income distribution, the difference between the relationship between AFDC generosity and budget allocations for lower and higher expenditure households does provide potentially more compelling evidence.

The next two rows are goods that one might think of as being "adult" goods or "male" goods: alcohol (row 3) and expenditures that are likely to be associated with adult male leisure activities, namely tools, car maintenance, gas and sports

[13]See Rubalcava and Thomas (2000) for a discussion of the fuller set of results.

[14]Results for the individual items in these commodity groups are quantitatively and substantively the same as the group; our choice of groups was based on ex post testing of equality of estimates of AFDC generosity.

[15]An alternative specification would model the decision to purchase and the amount purchased separately; in the absence of instruments that affect the decision to purchase but not the amount spent, we do not pursue that strategy.

entertainment (in row 4). The share of the budget spent on these goods declines with AFDC generosity as does the probability a household with a young child buys alcohol. All of these effects are much larger for lower expenditure households.

If AFDC generosity is associated with reduced expenditure on food out of the home, alcohol and male leisure items, it must be associated with increased expenditures on other goods. One group of such items is "child" goods: baby clothing, furniture and toys (row 5). The share rises with AFDC generosity as does the probability of buying these goods; these increases are larger for lower expenditure households with young children.

AFDC generosity is also associated with a higher share of the budget being spent on health as well as increasing the probability a household spends anything on health care. Both of the estimated effects are significant only among lower expenditure households. If spending health care is indicative of investment in human capital then these results suggest that AFDC generosity are associated with greater such investments.

If our interpretation that AFDC generosity affects a woman's bargaining power is correct, then the evidence suggests that relative to men, women place greater value on baby or child goods and spending on health and less value on alcohol and male leisure goods. Women are also less inclined to spend money on food out of the home. This evidence is consistent with other studies that have found women tend to allocate resources away from "male" goods towards "child" and possibly "female" goods. (Lundberg, Pollak and Wales, 1997; Thomas, 1990).[16] We view the CEX results as being suggestive in their support of our main results based on the PSID.

Conclusions

The notion of "power" within the household plays no part in resource allocations in the unitary model of the household. Assuming variation in the generosity of AFDC benefits affect the fallback positions of women, we find that the share of income allocated to food and time allocated to labor market activities are affected by "power". The results suggest that AFDC impacts the bargaining position of women with young children and women in lower income households relative to their partners and that this, in turn, affects the way time and money is allocated in the home. The results are robust to a range of sources of unobserved heterogeneity including state fixed effects, time fixed effects, time-varying region effects and household fixed effects.

[16]We are unable to detect evidence that AFDC generosity is associated with a shift away from male clothing and towards female clothing as shown for the United Kingdom by Lundberg Pollak and Wales.

References

Becker, G.S. (1973). "A Theory of Marriage: Part I." *Journal of Political Economy,* 81 (4), 813-845.

_____(1974). "A Theory of Marriage: Part II." *Journal of Political Economy,* 82, (no. 2, part 2), S11-S26.

_____(1981). "A Treatise on the Family." Cambridge, MA: Harvard University Press.

Bergstrom, T. (1997). A survey of theories of the family, in M. Rosenzweig and O. Stark (eds.) *Handbook of Family and Population Economics*, Amsterdam: North Holland.

Bjorn, P. A. and Q. H. Vuong. 1984. Simultaneous equations models for dummy endogenous variables: a game theoretic formulation with an application to labor force participation, working paper, California Institute of Technology.

1985. Econometric modelling of a Stackelberg game with an application to labor force participation, working paper, California Institute of Technology.

Bourguignon, F., Browning, M., Chiappori, P.A. and V. Lechene. (1993). "Intra Household Allocation of Consumption: a Model and some Evidence from French Data." *Annales d' Economie et de Statistique*, 29, 138-156.

Bourguignon, F. and P.A. Chiappori. (1992). "Collective models of household behavior: An introduction." *European Economic Review*, 36, 355-364.

(1994). " Efficient Intra-household allocations: A General Characterization and Empirical Tests." Mimeo McMaster University and DELTA and CNRS, Paris.

Browning, M. Bourguignon, F., Chiappori, P.A. and V. Lechene (1994). "Income and Outcomes: A Structural Model of Intrahousehold Allocation." *Journal of Political Economy,* 102, 1067-1096.

Carlin, P S. (1991). "Intra-Family Bargaining and Time Allocation." in T. P. Schultz, (ed.), *Research in Population Economics,* vol. 7, 215-243. Greenwich, CT: JAI Press.

Chiappori, P. A. (1988). "Rational Household Labor Supply." *Econometrica*, 56, 63-89.

_____(1992). "Collective Labor Supply and Welfare." *Journal of Political Economy,* 100, 437-467.

_____(1997). "Introducing Household Production in Collective Models of Labor Supply." *Journal of Political Economy,* 105(1), 191-205.

Crawford P. and R.A. Pollak, "Child Care Policy". Mimeo.

Ellwood, David and Mary Jo Bane. (1985). "The Impact of AFDC on Family Structure and Living Arrangements," in Ronald Ehrenberg, Ed., *Research in Labor Economics*, Volume 8, Greenwich, CT: JAI Press.

Gruber, J. (1996). "Cash Welfare as a Consumption Smoothing Mechanism for Single Mothers." Mimeo MIT and NBER.

Hoynes, H. (1995). "Does Welfare Play a Role in Female Headship Decisions?," NBER Working Paper #5149.

Hu, W. (1997). "Welfare and Marriage," mimeo, UCLA.

Lundberg, Shelly and Robert Pollak. (1993). "Separate spheres bargaining and the marriage market," *Journal of Political Economy*, 101.6:988-1010.

Lundberg S.J., Pollak R.A. and T.J. Wales (1997). "Do Husbands and Wives Pool Their Resources? Evidence from the United Kingdom Child Benefit," *Journal of Human Resources*, 32.3:463-80.

Manser, M. and M. Brown. (1980). Marriage and household decision making: a bargaining analysis, *International Economic Review*, 21.1:31-44.

McElroy, M. B. (1990). "The Empirical Content of the Nash-Bargained Household Behavior," *Journal of Human Resources*, 25.4:559-83.

McElroy M. and M.J. Horney (1981). "Nash-Bargained Household Decisions: Toward a Generalization of the Theory of Demand." *International Economic Review*, 22(2), 333-349.

Moffit, R. A. Reville, R.T. and A.E. Winkler (1994). "State AFDC Rules Regarding the Treatment of Cohabitors: 1993." *Social Security Bulletin*, 57(4), 26-33.

Moffit, R.A. (1992). "Incentive Effects of the U.S. Welfare System: A Review." *Journal of Economic Literature*, XXX, 1-61.

_____(1996). "The Effect of Welfare on Marriage and Fertility: What do we know and what do we need to know?" Mimeo: Johns Hopkins University.

Rubalcava, L. and D. Thomas. (2000). "Household expenditures, income and potential income", mimeo.

Samuelson, P. (1956). "Social Indifference Curves." *Quarterly Journal of Economics*, 70(1), 1-22.

Schultz, T. P. (1990). "Testing the Neoclassical Model of Family Labor Supply and Fertility." *Journal of Human Resources*, 25(4), 599-634.

Thomas, D. (1990). "Intra-Household Resource Allocation: An Inferential Approach." *Journal of Human Resources*, 25(4), 635-664.

_____(1994). " Like Father, Like Son; Like Mother, Like Daughter." *Journal of Human Resources*, XXIX 4, 950-988.

Thomas, D., Contreras, D. and E. Frankenberg (1997). "Child Health and the Distribution of Household Resources at Marriage." Mimeo RAND, UCLA.

Ulph, David. (1988). A general non-cooperative Nash model of household consumption behaviour. Mimeo, Bristol University.

Ward-Batts, Jennifer. (1997). Modeling family expenditures to test income pooling. Mimeo, University of Washington.

Zeldes, S. P. (1989). "Consumption and Liquidity Constraints: An Empirical Investigation." *Journal of Political Economy*, 97, 305-346.

Figure 1: AFDC Monthly Maximum Benefits

Mean and standard deviation (1968-1992) (in $1984)

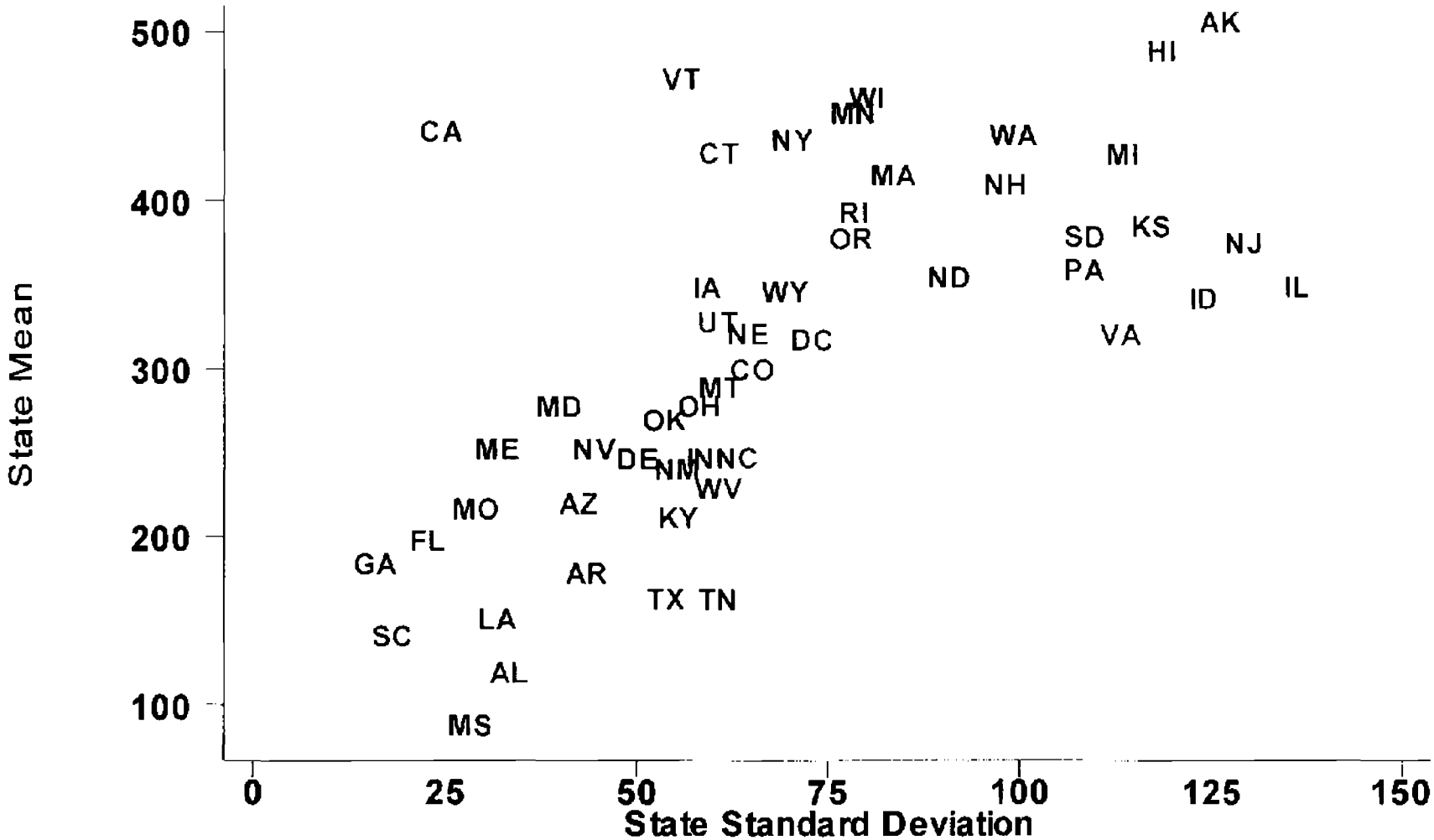

Figure 2: AFDC maximum payments and food shares

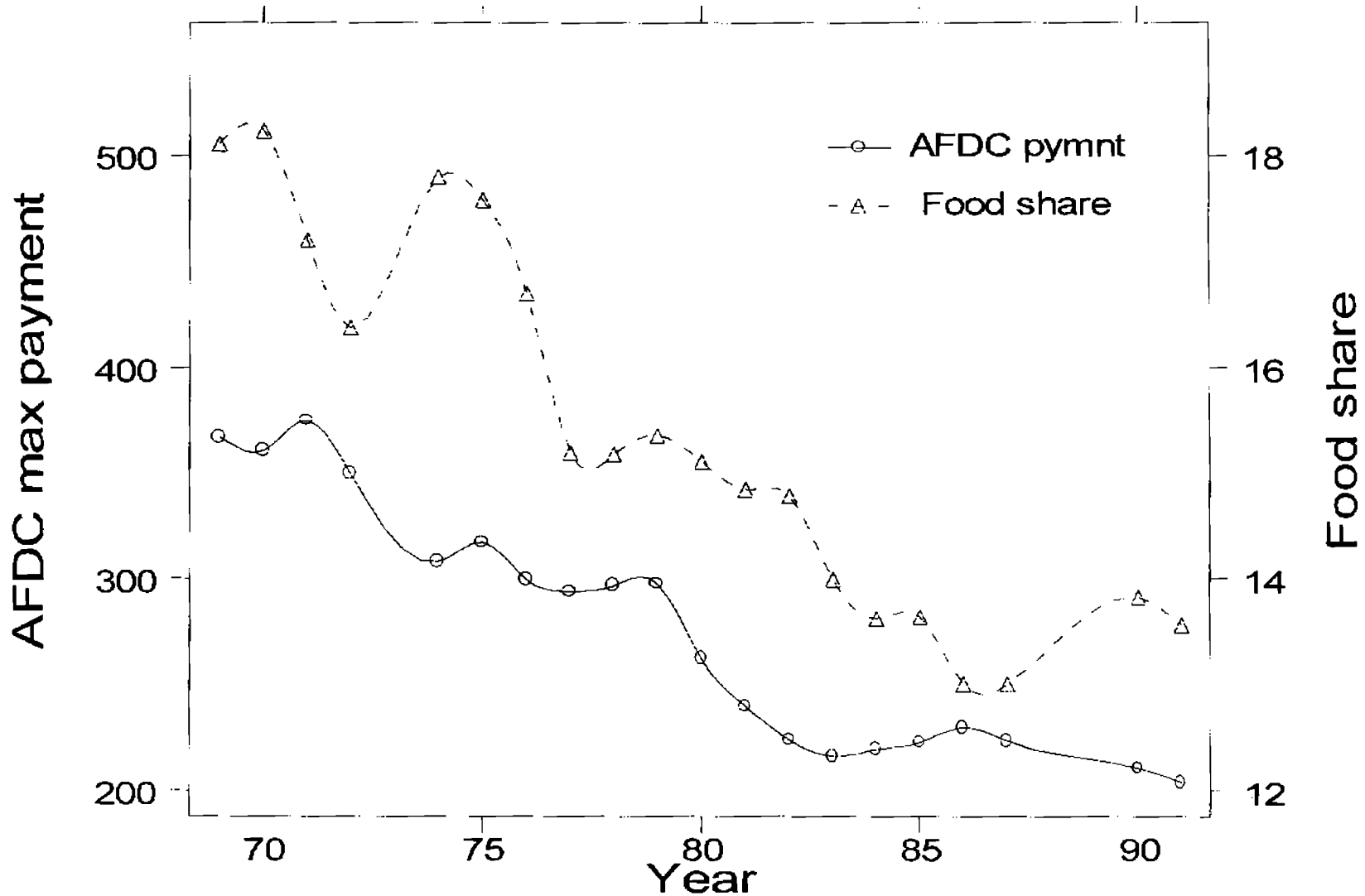

Figure 3: AFDC maximum payments and food shares
By region

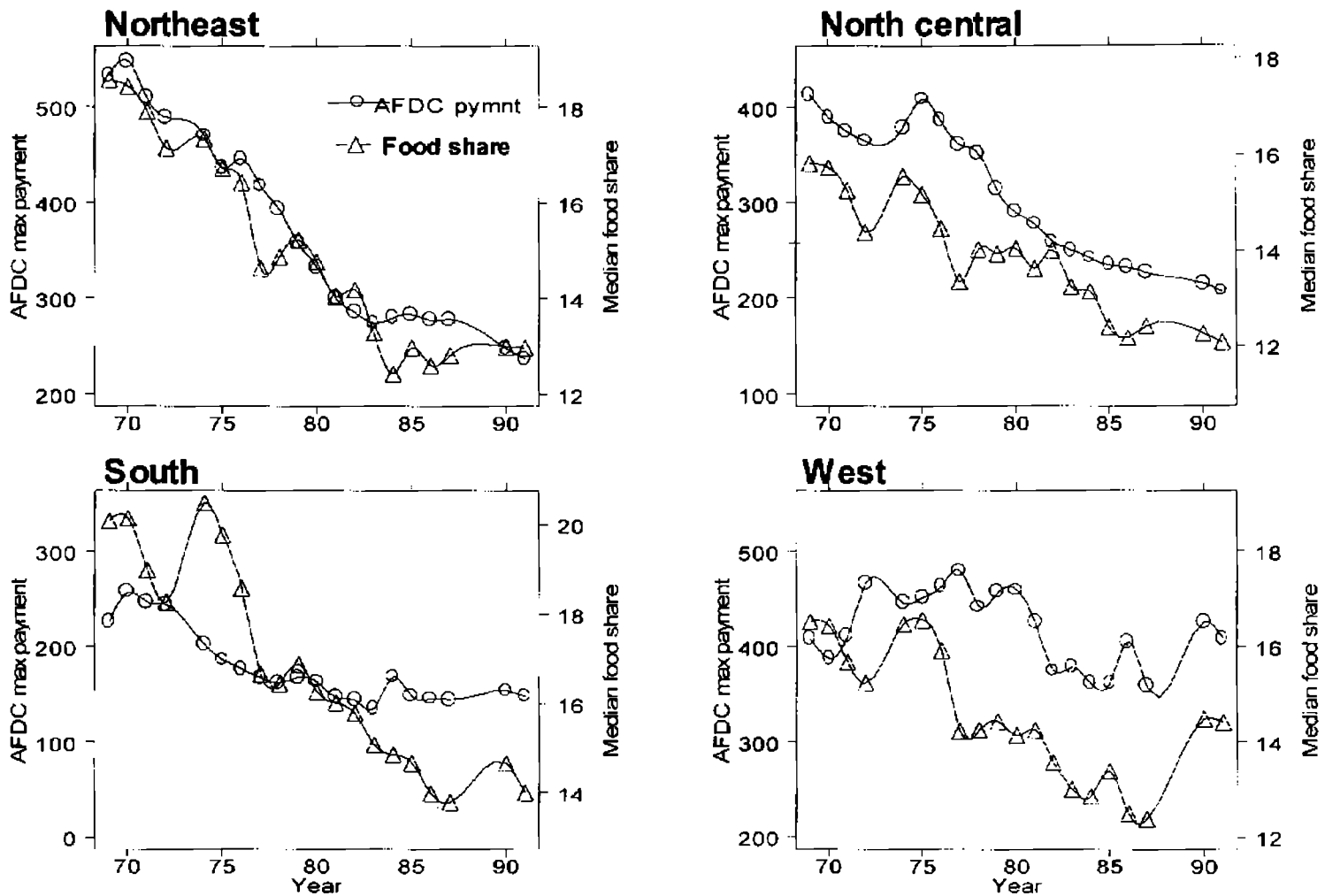

Table 1
Effect of AFDC benefit on share of income spent on food
Direct effects and interactions with number of children

Dependent variable Share of income on food	OLS (1)	Time Effects (2)	State Effects (3)	State & Time Effects (4)	Family Effects (5)	Family State & Time (6)
Panel A						
ℓ n(AFDC benefit)	2.059	0.241	0.363	-0.433	0.761	-0.705
	[0.21]	[0.21]	[0.43]	[0.52]	[0.35]	[0.63]
ℓ n(benefit)*children 0-5	-0.282	-0.292	-0.308	-0.303	-0.149	-0.150
	[0.04]	[0.04]	[0.04]	[0.04]	[0.03]	[0.03]
ℓ n(benefit)*children 6-11	-0.076	-0.061	-0.083	-0.081	0.020	0.018
	[0.04]	[0.04]	[0.04]	[0.04]	[0.03]	[0.03]
ℓ n(benefit)*children 12-17	0.041	0.083	0.059	0.061	-0.015	0.009
	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]
F (all covariates)	679.34	450.44	271.12	185.50	456.91	84.45
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
R^2	0.584	0.590	0.594	0.598	0.770	0.774
Panel B						
ℓ n(AFDC benefit)	2.070	0.269	0.385	-0.409	0.756	-0.700
	[0.21]	[0.21]	[0.43]	[0.52]	[0.36]	[0.63]
ℓ n(benefit)*children 0-5	-0.285	-0.299	-0.313	-0.308	-0.148	-0.151
	[0.04]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]
ℓ n(benefit)*children 6-11	-0.074	-0.058	-0.082	-0.079	0.021	0.018
	[0.04]	[0.04]	[0.04]	[0.04]	[0.03]	[0.03]
F (all covariates)	694.19	448.33	271.24	184.34	461.04	84.34
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
R^2	0.584	0.590	0.594	0.598	0.770	0.774
Panel C						
ℓ n(AFDC benefit)	2.052	0.251	0.361	-0.427	0.763	-0.696
	[0.21]	[0.20]	[0.43]	[0.52]	[0.36]	[0.63]
ℓ n(benefit)*children 0-5	-0.289	-0.301	-0.317	-0.311	-0.149	-0.152
	[0.04]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]
F (all covariates)	722.25	456.16	274.07	185.11	486.23	84.24
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
R^2	0.584	0.590	0.594	0.598	0.770	0.774

Notes: Sample contains 8,506 intact couples with children, 6.35 observations per family on average, sample size is 54,010. Standard errors in parentheses robust to state-year clustering and heteroskedasticity. Regressions include controls for age-specific number of children in household, number of male and female adults in household, spline in log of HH income, age of head and spouse, education of head and spouse, cubic root of value of house owned, state per capita personal income and county unemployment rate. Column six includes family, time and state fixed effects, state-specific trends and region*time fixed effects. F tests (column 6, panel C) are for joint significance of hh effects, F(189,45315) 218.9, for joint significance of state & time effects, F(116,45315) 4.8

Table 2:
Effect of AFDC benefit on share of income spent on food

	AFDC benefit * Child interactions		Families with no Children	HH *per capita* income Multiple of AFDC payment			Is HH homeowner in every year of survey?	
	All ages	0-6 only	(w/in 2 years)	< 3	3-9	>9	No	Yes
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ℓ n(AFDC benefit)	-0.704	-0.696	0.056	-6.582	-1.407	-0.347	-0.737	1.443
	[0.63]	[0.63]	[0.99]	[3.26]	[0.72]	[0.76]	[0.64]	[1.69]
* children 0-5	-0.150	-0.152		-0.365	-0.127	-0.071	-0.160	0.039
	[0.03]	[0.03]		[0.13]	[0.04]	[0.05]	[0.03]	[0.13]
* children 6-11	0.019							
	[0.03]							
* children 12-17	0.010							
	[0.04]							
Household composition								
# of children 0-5	-0.306	-0.313		-1.222	-0.777	-0.181	-0.310	-0.106
	[0.20]	[0.19]		[0.65]	[0.21]	[0.32]	[0.20]	[0.77]
children 6-11	0.005	0.046		-0.625	-0.301	0.142	0.029	0.405
	[0.17]	[0.15]		[0.50]	[0.16]	[0.27]	[0.15]	[0.68]
children 12-17	0.278	0.294		-0.540	0.101	0.464	0.289	0.340
	[0.18]	[0.16]		[0.53]	[0.16]	[0.24]	[0.16]	[0.64]
# male adults	-0.130	-0.141	-0.215	-0.063	-0.327	0.165	-0.131	-0.273
	[0.19]	[0.19]	[0.70]	[0.71]	[0.19]	[0.30]	[0.19]	[0.62]
# female adults	-0.486	-0.499	-1.009	-1.144	-0.642	0.094	-0.515	-0.500
	[0.19]	[0.18]	[0.68]	[0.67]	[0.19]	[0.32]	[0.19]	[0.84]
HH size (includes non family members)	7.490	7.549	7.936	15.309	8.372	5.007	7.662	3.758
	[0.60]	[0.57]	[1.89]	[2.51]	[0.60]	[0.80]	[0.59]	[2.36]
ℓ n(HH income) spline								
bottom 25%ile	-37.800	-37.801	-33.062	-45.919	-35.307	-35.297	-37.507	-45.261
	[0.84]	[0.84]	[1.45]	[1.68]	[1.13]	[3.29]	[0.86]	[4.51]
25-75%ile	-12.434	-12.433	-13.151	-14.588	-12.993	-12.099	-12.545	-10.814
	[0.27]	[0.27]	[0.48]	[0.95]	[0.30]	[0.44]	[0.27]	[1.27]
top 25%ile	-8.945	-8.945	-9.164	-18.185	-10.297	-8.150	-9.028	-7.467
	[0.31]	[0.31]	[0.45]	[2.84]	[0.35]	[0.53]	[0.33]	[0.58]
Value of house (cubic root)	0.029	0.029	0.049	0.044	0.024	0.015	0.030	-0.019
	[0.00]	[0.00]	[0.01]	[0.02]	[0.00]	[0.01]	[0.00]	[0.02]
State *per capita* income ($000s)	0.001	0.001	0.000	0.001	0.001	0.001	0.001	0.001
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
County unemployment Rate	-3.121	-3.121	-2.611	-24.098	3.302	-5.254	-2.774	-6.292
	[4.07]	[4.07]	[5.59]	[11.32]	[6.15]	[3.00]	[4.18]	[13.36]
F test (all covs)	84.47	84.24	1223.87		89.89	6598.16	80.82	878.04
[p-value]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
R^2	0.774	0.774	0.762	0.783	0.722	0.715	0.767	0.879
Sample sizes	54,010	54,010	15,999	8,443	32,402	13,165	49,969	4,041

Notes: See Table 1

Table 3
Effect of AFDC benefit on share of income spent on food
Robustness to food share outliers

	Trimmed FE (1% trimming) (1)	Trimmed FE (5% trimming) (2)	Median Regression (3)	Huber Robust Regression (4)
ℓn(AFDC benefit)	-0.498	-0.300	0.076	-0.066
	[0.41]	[0.31]	[0.26]	[0.24]
* children 0-5	-0.157	-0.133	-0.151	-0.126
	[0.03]	[0.02]	[0.02]	[0.02]

Notes: See Table 1. Regression models include covariates listed in note at foot of Table 1. Fixed effects models (FE) include family, state, time, region*time fixed effects and state-specific time trends. 1% trimming means ½% trim at top and bottom of distribution. Huber robust regression uses biweight weighting function to downweight outliers (weighting constant=7).

Table 4:
Effect of AFDC benefit on
Share of income spent on food, share on food out of home,
hours of work (of man and woman) and woman's share of those hours
Models with family, state, time fixed effects and state-specific time trends

	Share of income on food (1)	ℓ n(hrs) worked by woman (2)	ℓ n(hrs) worked by man (3)	Woman's share of total Hours worked (4)
ℓ n(AFDC benefit)	-0.098	0.155	0.042	1.973
	[0.80]	[0.05]	[0.02]	[0.86]
*children 0-5	-0.103	-0.016	0.002	-0.371
	[0.04]	[0.01]	[0.00]	[0.09]
Household composition				
# of children 0-5	0.063	-0.110	-0.031	-0.945
	[0.22]	[0.03]	[0.01]	[0.46]
6-11	0.392	0.025	-0.020	0.746
	[0.19]	[0.02]	[0.01]	[0.34]
12-17	0.522	0.101	-0.021	1.896
	[0.18]	[0.02]	[0.01]	[0.32]
# of male adults	-0.149	0.089	-0.056	2.276
	[0.21]	[0.02]	[0.01]	[0.42]
# of female adults	-0.381	0.096	-0.041	2.185
	[0.22]	[0.03]	[0.01]	[0.44]
HH size (incl non-family members)	5.211	-0.520	0.186	-11.829
	[0.65]	[0.06]	[0.03]	[1.23]
ln(HH income) spline				
bottom 25%ile	-38.168	0.142	0.193	-0.904
	[1.63]	[0.05]	[0.03]	[0.97]
25-75%ile	-11.607	0.464	0.271	3.262
	[0.36]	[0.04]	[0.02]	[0.65]
top 25%ile	-7.984	0.280	0.244	0.307
	[0.22]	[0.04]	[0.02]	[0.77]
Value of house	0.010	-0.001	0.001	-0.036
	[0.00]	[0.00]	[0.00]	[0.01]
State *per capita* income ($000s)	0.000	0.000	0.000	0.000
	[0.00]	[0.00]	[0.00]	[0.00]
County unemployment rate	-1.461	0.399	-0.250	11.758
	[2.33]	[0.30]	[0.16]	[5.56]
F (all covariates)	61.06	11.09	6.78	13.90
[p value]	[0.00]	[0.00]	[0.00]	[0.00]
R^2	0.809	0.577	0.525	0.578

Notes: Sample includes couples with children with both husband and wife working in survey year. 29,462 observations. See Table 1.

Table 5:
Effect of AFDC benefit on share of income spent on food
Region-specific effects
Models with family, state, time fixed effects and state-specific time trends

	Northeast (1)	North-Central (2)	South (3)	West (4)
Sample period 1968-1991				
A.1 Coefficient estimate				
ℓ n(AFDC benefit)	0.179	0.171	0.191	0.193
	[0.33]	[0.34]	[0.37]	[0.33]
A.2 F tests for equality				
1. Northeast and		0.01	0.02	0.04
		[0.92]	[0.89]	[0.85]
2. North-Central and			0.06	0.11
			[0.80]	[0.74
3. South and				0.00
				[0.98]
4. Joint test all regions				
All effects equal		0.05		
		[0.99]		
All effects zero		0.12		
		[0.98]		
Sample period 1968-1991				
B.1 Coefficient estimate				
ℓ n(AFDC benefit)	-0.142	-0.199	-0.162	-0.093
* children 0-5	[0.04]	[0.04]	[0.04]	[0.04]
B.2 F tests for equality				
1. Northeast and		2.01	0.19	1.23
		[0.16]	[0.66]	[0.27]
2. North-Central and			0.64	5.91
			[0.42]	[0.02]
3. South and				2.07
				[0.15]
4. Joint test all regions				
All effects equal		2.06		
		[0.10]		
All effects zero		7.94		
		[0.00]		
Sample period 1968-1988				
C.1 Coefficient estimate				
ℓ n(AFDC benefit)	-0.145	-0.195	-0.196	-0.114
* children 0-5	[0.04]	[0.04]	[0.05]	[0.05]
C.2 F tests for equality				
1. Northeast and		1.33	0.98	0.38
		[0.25]	[0.32]	[0.54]
2. North-Central and			0.00	2.721
			[0.98]	[0.10]
3. South and				2.17
				[0.14]
4. Joint test all regions				
All effects equal		1.25		
		[0.29]		
All effects zero		7.17		
		[0.00]		

Notes: See Table 1. [p values] below F statistics, [standard errors] below coefficients.

Table 6:
Household budget allocations and AFDC generosity in the CEX
Effect of AFDC benefit interacted with presence of children age 0-5 in household

	Budget shares			Probability buy any				
	All HHs	HHs whose PCE		All	HHs whose PCE		Budget	%
		<median	≥median	All	<median	≥median	Share	Buy
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Food	-0.075	-0.119	-0.049				25.96	100
	[0.035]	[0.058]	[0.042]				[0.06]	
2. Food out	-0.111	-0.130	-0.093	-0.462	-0.763	-0.210	3.35	94
	[0.010]	[0.015]	[0.012]	[0.090]	[0.167]	[0.076]	[0.02]	
3. Alcohol	-0.037	-0.043	-0.029	-0.599	-0.944	-0.237	1.09	71
	[0.005]	[0.010]	[0.006]	[0.170]	[0.264]	[0.211]	[0.01]	
4. Tools, car maintenance sports entertainment	-0.224	-0.307	-0.143				13.53	99
	[0.027]	[0.038]	[0.036]				[0.04]	
5. Baby clothing, baby furniture and toys	0.227	0.281	0.178	6.140	6.380	5.876	1.23	47
	[0.013]	[0.020]	[0.016]	[0.156]	[0.223]	[0.212]	[0.01]	
6. Health	0.084	0.120	0.040	0.258	0.383	0.103	5.30	94
	[0.022]	[0.028]	[0.034]	[0.100]	[0.190]	[0.100]	[0.03]	

Notes: Sample size is 42,750. Coefficient estimates reported in columns 1-6 are β_2 in [6]. Models include state and time fixed effects, region-year fixed effects, along with log of household expenditure (specified as a spline), household composition (number of children 0-5, children 6-11, children 12-18, number of adults, number of males, number of females and interactions with household expenditure), age and education of head and spouse, cubic root of household assets, county-level unemployment rate and state-level per capita personal income. Robust standard errors in parentheses. Purchase probability not reported for food and cars, sports, entertainment because almost all household report some expenditures.

Appendix Table 1: Summary statistics

	Sample of intact couples		Sample of intact couples both of whom work in labor market	
	Mean (1)	Standard Error (2)	Mean (3)	Standard Error (4)
AFDC benefit ($1984)	283.31	0.553		
ℓ n (AFDC benefit)	5.53	0.002	5.52	0.003
Standard deviation:				
Overall	0.500			
Between	0.473			
Within	0.197			
Income shares				
Food	0.18	0.001	0.15	0.001
Standard deviation:				
Overall	0.156			
Between	0.173			
Within	0.102			
Food out of home	0.03	0.0003	0.02	0.000
Woman's log(hrs. of work)	3.06	0.005	3.06	0.005
Man's log(hrs. of work)	3.63	0.002	3.66	0.003
Woman's share of those hrs.	0.28	0.001	0.39	0.001
# children 0-5	0.48	0.003	0.46	0.004
# children 6-11	0.41	0.003	0.42	0.004
# children 12-17	0.38	0.003	0.40	0.005
# male adults	1.13	0.002	1.12	0.002
# female adults	1.12	0.002	1.11	0.002
HH size	3.53	0.007	3.51	0.008
ℓ n (HH income)	10.21	0.003	10.38	0.003
Value of house ($000)	30.62	0.184	28.38	0.241
Woman's age	39.38	0.062	35.20	0.063
Man's age	42.11	0.065	37.71	0.067
Woman's education:				
< high school	0.24	0.002	0.15	0.002
high school	0.44	0.002	0.46	0.003
> high school	0.32	0.002	0.39	0.003
Man's education				
< high school	0.28	0.002	0.21	0.002
= high school	0.35	0.002	0.37	0.003
> high school	0.37	0.002	0.42	0.003
State per capita inc ($000s)	12.22	0.009	12.38	0.013
County unemployment rate	0.06	0.000	0.06	0.000
Number of households	8,506		6,548	
Number of household-years	54,010		29,462	