Regional Welfare Programs and Labor Force Participation

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Abstract

Welfare recipiency declined and labor force participation increased differentially across the United States over the past decade. This paper investigates whether this is due to the differences in opportunities, behavior, or state welfare program parameters. A model of labor force and program participation choice is developed and estimated. The welfare and labor force participation of midwestern families categorically eligible for Temporary Assistance for Needy Families (TANF) income support is compared to participation choices by families in the rest of the United States. We find that midwestern labor force participation does differ from that of other regions nationwide, and we show how participation in TANF depends on state-level differences in welfare programs.

Key words: labor force participation, regional welfare program participation, state policies.

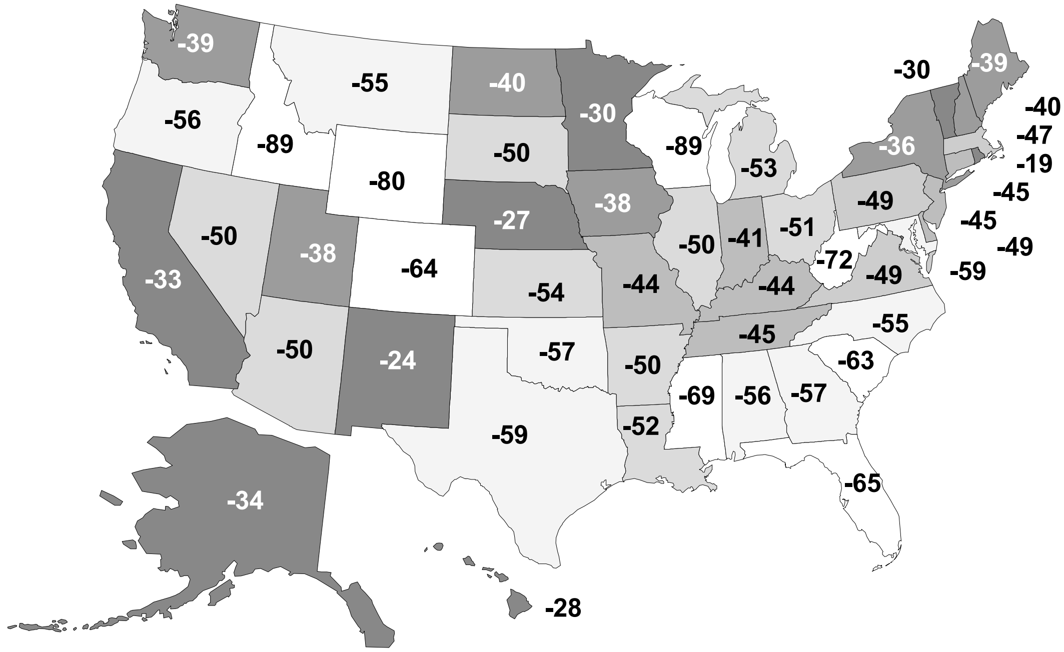
REGIONAL WELFARE PROGRAMS AND LABOR FORCE PARTICIPATION

Introduction

The Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) enacted in 1996 gave states responsibility for administering their own versions of the Temporary Assistance to Needy Families (TANF) program. The act was based on the presumption that when states tailor eligibility requirements, benefit levels, and implicit taxes on work to their local conditions, welfare programs will be more effective at promoting labor force participation and self-sufficiency. Indeed, welfare recipiency has declined across the nation since TANF went into effect (CEA 1997, 1999; Schoeni and Blank 2000). However, state welfare rolls have declined differentially (Saving and Cox 2000), as shown in Figure 1. One reason why welfare recipiency has declined more in some states than in others is that local economic opportunities differ, as shown in Figure 2. Other possible reasons include differences in state welfare programs (Figures 3, 4, 5, and 6) and differences in household preferences.

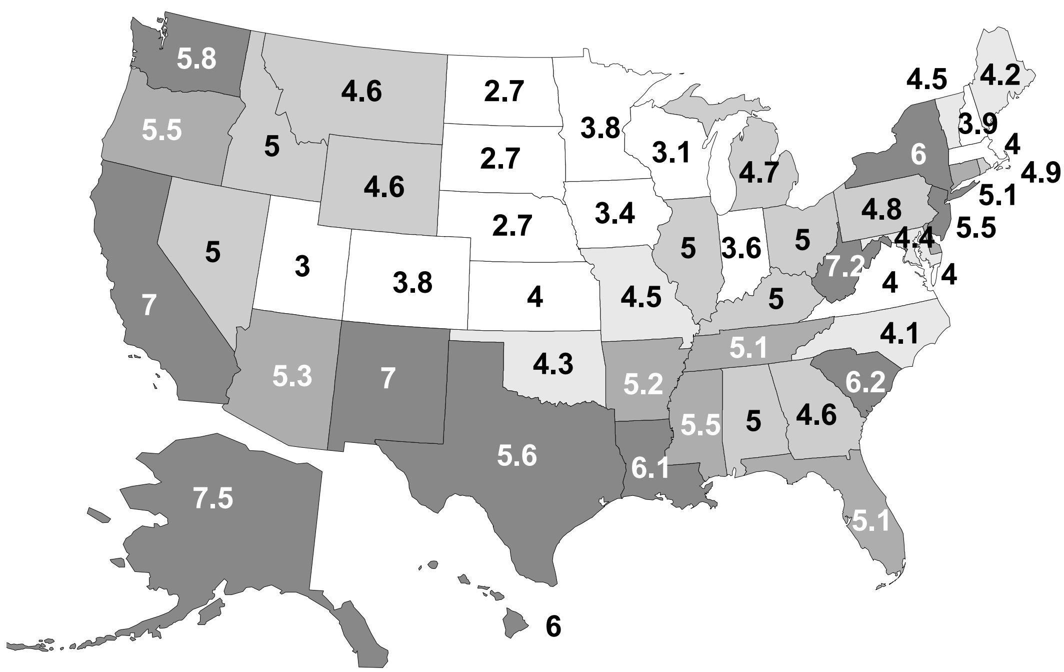
The first objective of this paper is to test the null hypothesis that welfare program parameters do not affect household decisions to work. In that case, differences across state programs would not matter. We estimate models of the simultaneously chosen TANF program and labor force participation decisions of 5,930 categorically eligible households (U.S. Census Bureau 2000), merged with data on state TANF program parameters (Rowe 2000) and data on local economic conditions (U.S. Department of Labor 1997). In our study, the variations across states in payment standards and implicit taxes on earned income helps to identify household responses. We contribute regional cross-section evidence to the increasing number of studies that show that program parameters do matter.

For example, Moffitt (1992) reviewed the research on the effects of the national welfare system on individual work incentives, family structure, and migration. The old



Data: Statistical Abstract of the United States 2000, U.S. Department of Commerce 2001, Table 626.

FIGURE 1. Percentage change in the number of TANF families, 1995-99



Source: U.S. Department of Labor 1997.

FIGURE 2. State unemployment rates, 1997 (%)

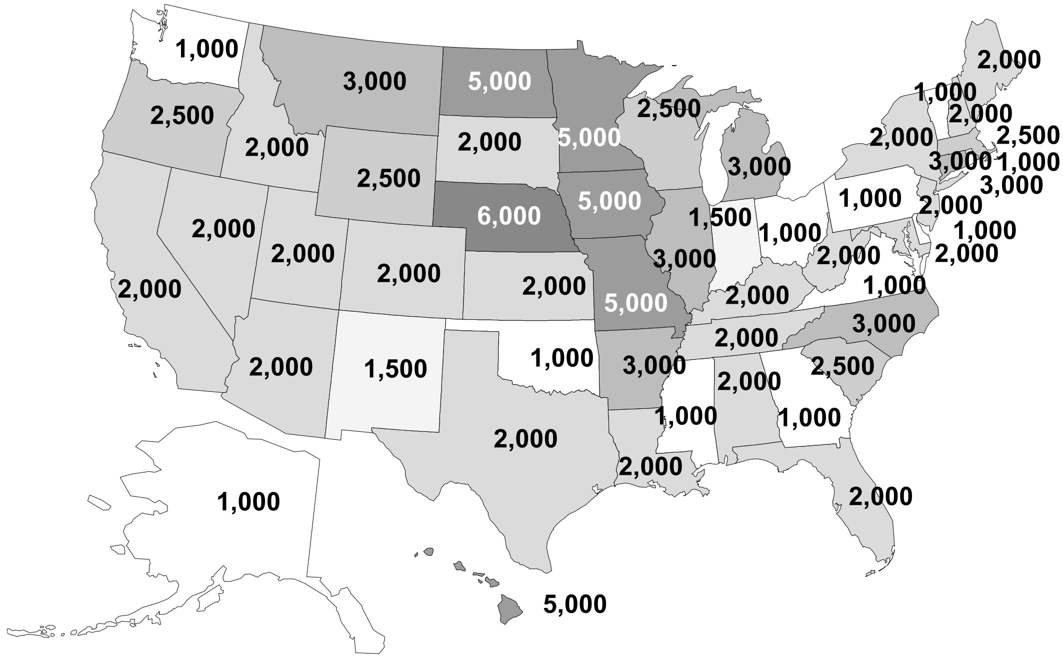


FIGURE 3. Limits on assets for TANF eligibility

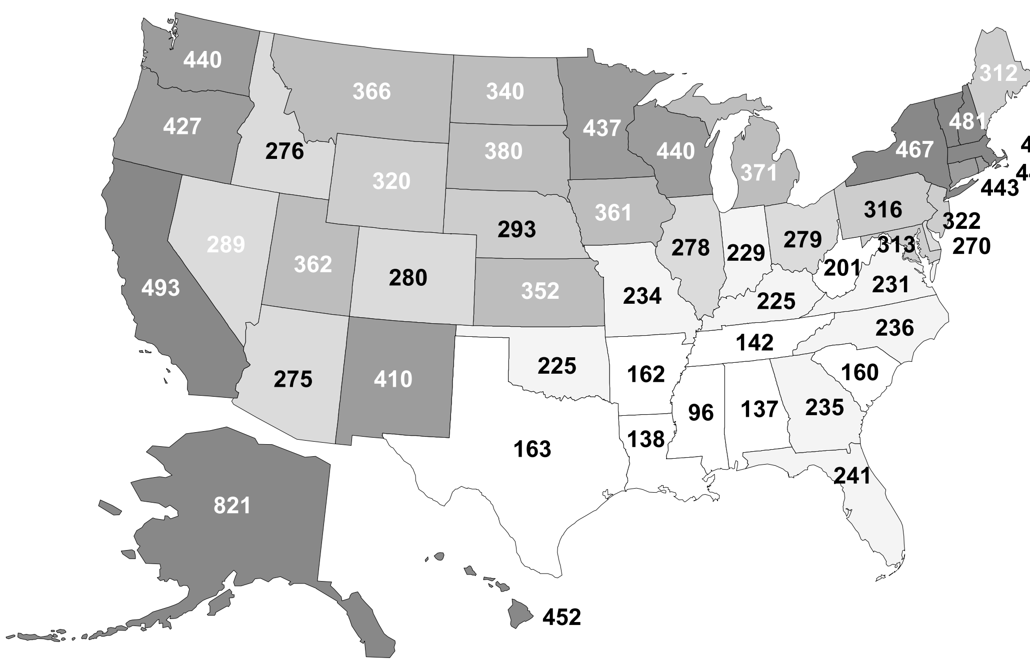


FIGURE 4. Monthly TANF benefits ($) for a fmily of four

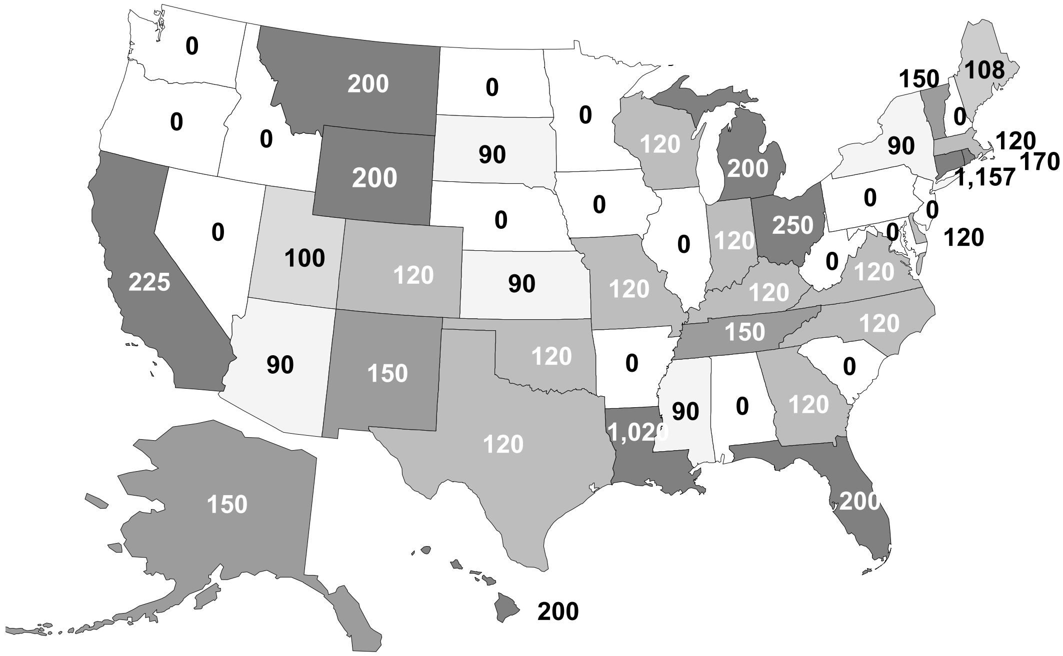


FIGURE 5. Amounts ($) of earned income disregarded when calculating actual benefits paid

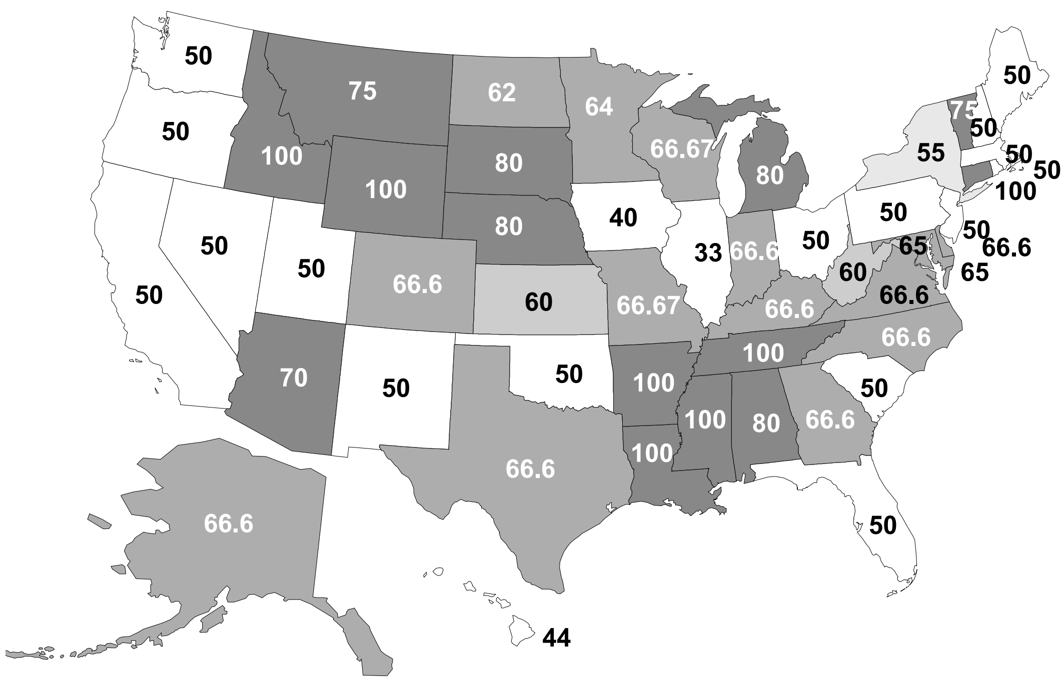


FIGURE 6. Percentage of countable income that reduces benefits relative to payment standards

income support program dampened the incentives to work and provided incentives to remain single. Many eligible households, however, did not participate. Recent research shows that welfare program parameters continue to have significant effects on labor supply, and that welfare program instruments also affect participation. Keane and Moffitt (1998) estimated a structural model of the choices to work and/or participate in multiple welfare programs among sole female-headed families. They used their estimated parameters to conduct policy simulations, such as changing the benefits, wage subsidies, and minimum wage, and found that changes in wage rates have a larger effect on decisions than do changes in welfare benefits.

Hoynes (1996) modeled the effects of cash transfers on labor supply and welfare participation of each adult in two-parent families. She showed that labor supply and welfare participation of persons in households with both spouses present are highly responsive to changes in the benefit structure under the Aid to Families with Dependent Children-Unemployed Parent program (AFDC-UP). Recently, Hoynes (2000) also examined the impacts of changes in local labor market conditions on participation in the AFDC program in California using the discrete duration models for exits and re-entry to welfare. She showed that higher unemployment rates, lower employment growth, and lower wage growth are associated with longer welfare spells and higher recidivism rates. None of this research, however, modeled both sole-parent and married-couple families or tested for regional variations in these responses.

We test a second null hypothesis that household behavior does not differ systematically across states. The efficiency rationale for the devolution of authority over TANF to states is undermined if we find that households in different regions do not respond differently to TANF program instruments or workplace opportunities. If responses do differ, then the optimal levels and rates of TANF program instruments also vary, and state-tailored TANF programs should be more efficient than a one-size-fits-all program. We find some evidence that responses differ regionally by comparing the TANF program and labor force participation choices of households in midwestern states to the choices made by households in the rest of the United States.

This research is similar in spirit to the work of Craig and Palumbo (1999) who examined interstate variability in unemployment insurance and welfare policies and outcomes from 1973 to 1989 (pre-PRWORA). They focused on states as the decision makers and units of observation and concluded that states do make explicit policy choices. We focus on households as decision makers. It is interesting to note, however, that just three TANF program parameters explain 29 percent of the variation in the percentage change in the number of households participating in TANF over the period 1995–99 by state (51 observations).

To focus on household choices, we use observations from the Survey of Income and Program Participation (SIPP) to estimate labor market and welfare program participation decisions among all low-wealth families in the Midwest and in the United States. Testable hypotheses are drawn from a model of family behavior where work and program participation are jointly chosen to maximize family utility given a resource constraint. We estimate a bivariate probit model of the joint work/TANF participation decision and a labor supply equation for working family members who do not participate in income support programs. We find that TANF program parameters matter: lower pay standards and implicit taxes on earned income increase the probability that someone in the family works. We find some behavioral differences between the Midwest and the rest of the United States with respect to opportunities, which indirectly affects TANF participation. We also find that midwestern low-wealth families who are eligible but not participating in TANF are more responsive to the wage rate in their labor supply decisions than are households in the rest of the United States. First, we present the model and the testable hypotheses. Then we describe our empirical approach and discuss the findings.

Hypothetical Model

The head of a household and the spouse, if present, are assumed to choose to work and/or participate in the TANF program if it maximizes their household's utility. A household's income support and labor force participation decisions are interdependent. Labor supply decisions depend on TANF benefits because the income transfer relaxes the household's budget constraint. TANF participation decisions depend on labor supply because the higher is the earned income, the lower are the TANF benefits. Following Moffitt (1983) and Hoynes (1996), we define the utility of a family as arising quasi-linearly from goods, time at home, and self-respect:

$$U(G, H, S) = U(G, H) + \delta T \tag{1}$$

where G denotes purchased goods, H is time at home, and $S = \delta T$ represents self-respect or stigma. The indicator T equals 1 if the family participates in TANF and 0 otherwise, and $\delta<0$ is the marginal or stigma associated with TANF participation. TANF-eligible households will not participate if the disutility of participating outweighs the utility of being able to afford more goods and/or to spend more time at home.

The state- and household-specific welfare program eligibility and payment criteria limit TANF benefits (B_{sh}) to whichever is lower, the state- and household-specific benefit maximum $\bar{B}_{sh}$, known as the payment standard, or the excess of $\bar{B}_{sh}$ over counted income:

$$B_{sh} = \min\{\bar{B}_{sh}, \bar{B}_{sh} - [b_s(\mathbf{WL} - i_s) + N_h]\}. \tag{2}$$

Counted income is household earned income (vector product $\mathbf{WL}$) less the earned income disregard (i_s) at the benefit reduction rate (b_s) plus unearned household income (N_h). The earned income disregard parameter i_s denotes the state-policy-specific dollar amount of earned income not counted when calculating the household's eligibility for transfers. The benefit reduction rate parameter b_s, $0 \le b_s \le 1$, is the rate at which additional dollars of earned income reduce the amount transferred. Thus, b_s is a marginal implicit tax on work and one way that states limit benefits per household. The earned income disregard i_s (multiplied by b_s) is a lump-sum incentive to work, suggesting the hypothesis that workforce participation may be positively related to $i_s b_s$. States choose the three parameters ($\bar{B}_{sh}$, b_s, i_s) to tailor their welfare programs to control enrollment and budget exposure as well as to provide incentives to eligible householders to work.

Given the TANF income support program opportunity, the household budget constraint is not convex. This can be shown as

$$I_h = [1 - T_h b_s](\mathbf{WL}) + (1-T_h)N_h + T_h b_s i_s + T_h(\bar{B}_{sh} - C_h) = \mathbf{PG}_h \tag{3}$$

where I_h denotes the households' money income from all sources, $T_h = 1$ if the household participates in TANF and 0 otherwise, the vector product $\mathbf{PG}_h$ is the household's expenditure on goods, and C_h is the household's monetary cost of participating in TANF. Participation in welfare programs entails out-of-pocket costs such as cost of transport to meetings with caseworkers and babysitters, and the opportunity costs of foregone earned income for time spent filing the application and giving interviews.

The household head and spouse, if present, allocate total time **D** to work, **L**, or to stay at home, **H**:

$$\mathbf{D} = \mathbf{L} + \mathbf{H}. \tag{4}$$

A family chooses the level of goods, time at home (or work time, **L**), and TANF participation, T, to maximize utility (1) internalizing the time constraint (4), subject to the budget constraint (3):

$$\max_{(G,L,T)} \; U(\mathbf{G},\mathbf{D}\text{-}\mathbf{L}) + \delta T + \lambda[(1\text{-}T_h b_s)(\mathbf{WL}) + (1\text{-}T_h)N_h + T_h b_s i_s + T_h(\bar{B}_{sh}\text{-}C_h) - \mathbf{PG}_h].$$

The first-order conditions for a constrained utility maximum imply these structural relationships:

$$U_G = \lambda\mathbf{P} \tag{5}$$

$$U_H = \lambda(1 - T^* b_s) \tag{6}$$

$$\delta = \lambda[\bar{B}_{sh} - b_s(\mathbf{WL}^* - i_s) - N - C] \tag{7}$$

where λ is the marginal increment to household utility of an additional unit of money income. By (6) we see that the higher is b_s, the lower is the value of time at home or return to work, again suggesting the hypothesis that workforce participation is negatively related to b_s. By (7) we see that a higher disutility of TANF participation can be sustained if the payment standard is higher, giving the hypothesis that welfare program participation is positively related to $\bar{B}_{sh}$. From the benefit formula (2) we also see that $\delta = \lambda(B_{sh} - C)$, which implies, as stated before, that the disutility of participating (δ) must outweigh the utility of being able to afford more goods and/or being able to spend more time at home; otherwise the household will not participate in TANF. We will test the hypotheses that labor supply is negatively related to the implicit tax b_s and positively related to $i_s b_s$. We will also test that TANF program participation is positively related to the payment standard $\bar{B}_{sh}$. In addition, we will compare these relationships across regions.

Solving for λ we find that $\lambda = \delta/[B_{sh}(\mathbf{W},\mathbf{L}^*, N, b_s, i_s, \bar{B}_{sh}) - C]$ so that the reduced forms for the two choice variables of interest are

$$\mathbf{L}^* = L(\mathbf{P}, \mathbf{W}, N, C, \delta, b_s, i_s, \bar{B}_{sh}) \tag{8}$$

$$T^{*}= T(\mathbf{P}, \mathbf{W}, N, C, \delta, b_s, i_s, \overline{B}_{sh}).$$

In sum, indirect household utility, $V_h(L^*,T^*)$, is a function of the local costs of living and local returns to labor ($\mathbf{P}$,$\mathbf{W}$); household unearned income, N_h; out-of-pocket costs for the household if it participates in TANF, C_h; disutility or stigma; TANF program parameters; and household preference parameters β:

$$V_h = v_h[L^*(\mathbf{P}, \mathbf{W}, N_h, C_h, \delta_h, b_s, i_s, \overline{B}_{sh}; \beta), T^*(\mathbf{P}, \mathbf{W}, N, C, \delta, b_s, i_s, \overline{B}_{sh}\,; \beta)].$$

We assume that households are observed choosing the pair (L^*,T^*) such that $V_h(L^*,T^*) \geq V_h(L',T')$ for all $(L',T') \neq (L^*,T^*)$.

Empirical Specification

Households make one of four choices:

1. neither work nor participate in TANF: $(L^*,T^*) = (0,0)$;
2. do not work but do participate: $(L^*,T^*) = (0,1)$;
3. work but do not participate: $(L^*,T^*) = (1,0)$;
4. both work and participate: $(L^*,T^*) = (1,1)$.

We estimate the two arguments (L^*,T^*) given by (8) as follows:

$L^{*}= L(\mathbf{P}, \mathbf{W}, N_h, C_h, \delta, b_s, i_s, \overline{B}_{sh}; \theta_L) = \theta_L'\mathbf{X}_L + \varepsilon_{hLT}$, where $L = 1$ if $L^{*} > 0$, and 0 otherwise, $T^{*}= T(\mathbf{P}, \mathbf{W}, N_h, C_h, \delta, b_s, i_s, \overline{B}_{sh}; \theta_T) = \theta_T'\mathbf{X}_T + \varepsilon_{hLT}$, where $T = 1$ if $T^{*} > 0$ and 0 otherwise, where $\mathbf{X} = (\mathbf{P}, \mathbf{W}, N_h, C_h, \delta, b_s, i_s, \overline{B}_{sh}, \mathbf{Z})$ is the vector of explanatory variables, including $\mathbf{Z}$, which is a vector of household characteristics and local economic conditions that proxy for β; and ε_{hLT} is the household- and alternative-specific disturbance. We assume $\varepsilon_{hLT} \sim N(0, \sigma_{LT})$ and that correlations are unrestricted, as explained below. The stochastic component reflects the effect of unobserved heterogeneity of preferences, that is, effects not associated with any of the characteristics in $\mathbf{Z}$. The estimated θ parameters reflect the contributions of the household and choice characteristics to the probability of observing each alternative.

The probabilities are evaluated, and the hypotheses previously posed are tested. We jointly estimate a bivariate binomial model of the discrete choices to participate in the labor force and welfare program using the full information maximum-likelihood method (FIML) and using instruments to avoid simultaneity bias. We calculate self-selection variables. Then we estimate the continuous variable—hours of labor supplied—by households who made choice (3) to work and not participate in TANF, again using instruments and controlling for self-selection.

For the discrete choice, we fit a bivariate binomial probit for the following reasons. Maddala (1983) presents an extensive discussion of limited-dependent and qualitative-variable models. The most widely used model in the discrete choice literature is the multinomial logit model, which is easier to estimate for large choice sets. However, residuals must be uncorrelated across alternatives in that specification. In our problem, the residuals are likely to be correlated and dependent. The multinomial probit specification we apply permits the error terms to be correlated across all alternatives in the choice set. Hence, we assume that ε_h are normally distributed with standard deviations $SD[\varepsilon_{hLT}] = (\sigma_h)$ and unrestricted correlations $CORR[\varepsilon_{hLT}, \varepsilon_{hL'T'}] = \rho(LT, L'T')$.

In modeling program participation choice, there also is the issue of controlling for (in)eligibility. Eligibility criteria differ across states (Table 1), are multidimensional, and the benefit is a function of income, which is endogenous. Some analysts control for (in)eligibility by selecting the portion of the sample with income below the payment standard. This introduces truncated sample bias. Other modelers have included income indicators of eligibility, such as observed income relative to poverty thresholds or payment standards. This approach is subject to simultaneity bias. Because eligibility is limited by income, participation is negatively related to income. Models that treat income as exogenous find that participation is indeed significantly negatively correlated with income. We identify the same response but avoid the biases by measuring the payoffs as follows.

As shown in equation (2), the benefit from participating in TANF is whichever is smaller: the pay standard or the net of it over countable income. Because income is endogenous to the choice to work, we calculate the household's payoff of participating ($\hat{B}_{hs}$) by its pay standard ($\bar{B}_{sh}$).

TABLE 1. State TANF and employment outcomes and policy parameters

State	% TANF	UNRATE (%)	Asset Limit ($)	B_{sh} ($)	i ($)	b (%)
Alabama	-56%	5.0%	2,000	137	0	80%
Alaska	-33%	7.5%	1,000	821	150	67%
Arizona	-50%	5.3%	2,000	275	90	70%
Arkansas	-50%	5.2%	3,000	162	0	100%
California	-33%	7.0%	2,000	493	225	50%
Colorado	-63%	3.8%	2,000	280	120	67%
Connecticut	-44%	5.1%	3,000	443	1157	100%
Delaware	-45%	5.5%	1,000	270	120	67%
Dist. of Colombia	-27%	7.3%	1,000	298	100	50%
Florida	-65%	5.1%	2,000	241	200	50%
Georgia	-57%	4.6%	1,000	235	120	67%
Hawaii	-27%	6.0%	5,000	452	200	44%
Idaho	-89%	5.0%	2,000	276	0	100%
Illinois	-50%	5.0%	3,000	278	0	33%
Indiana	-40%	3.6%	1,500	229	120	67%
Iowa	-37%	3.4%	5,000	361	0	40%
Kansas	-54%	4.0%	2,000	352	90	60%
Kentucky	-43%	5.0%	2,000	225	120	67%
Louisiana	-52%	6.1%	2,000	138	1020	100%
Maine	-38%	4.2%	2,000	312	108	50%
Maryland	-59%	4.4%	2,000	313	0	65%
Massachusetts	-46%	4.0%	2,500	474	120	50%
Michigan	-53%	4.7%	3,000	371	200	80%
Minnesota	-30%	3.8%	5,000	437	0	64%
Mississippi	-69%	5.5%	1,000	96	90	100%
Missouri	-43%	4.5%	5,000	234	120	67%
Montana	-55%	4.6%	3,000	366	200	75%
Nebraska	-27%	2.7%	6,000	293	0	80%
Nevada	-50%	5.0%	2,000	289	0	50%
New Hampshire	-40%	3.9%	2,000	481	0	50%
New Jersey	-45%	6.2%	2,000	322	0	50%
New Mexico	-24%	7.0%	1,500	410	150	50%
New York	-36%	6.0%	2,000	467	90	55%
North Carolina	-54%	4.1%	3,000	236	120	67%
North Dakota	-40%	2.7%	5,000	340	0	62%
Ohio	-50%	5.0%	1,000	279	250	50%
Oklahoma	-57%	4.3%	1,000	225	120	50%
Oregon	-55%	5.5%	2,500	427	0	50%
Pennsylvania	-49%	4.8%	1,000	316	0	50%
Rhode Island	-18%	4.9%	1,000	449	170	50%
South Carolina	-63%	6.2%	2,500	160	0	50%
South Dakota	-50%	2.7%	2,000	380	90	80%
Tennessee	-44%	5.1%	2,000	142	150	100%
Texas	-59%	5.6%	2,000	163	120	67%

TABLE 1. continued

Utah	-38%	3.0%	2,000	362	100	50%
Vermont	-30%	4.5%	1,000	554	150	75%
Virginia	-49%	4.0%	1,000	231	120	67%
Washington	-39%	5.8%	1,000	440	0	50%
West Virginia	-71%	7.2%	2,000	201	0	60%
Wisconsin	-89%	3.1%	2,500	440	120	67%
Wyoming	-80%	4.6%	2,500	320	200	100%

Sources:
TANF participation: U.S. Census Bureau 2000.
TANF Instruments: U.S. House of Representatives 1998; Gallagher et al. 1998.
Unemployment rates: U.S. Department of Labor 1997.

Furthermore, since observed wages are also endogenous to the choice to work, we control for this self-selection bias by first estimating the inverse Mills ratio from a probit model of the probability of working as a function of age, education, gender, race, numbers of children of different ages, marital status, and non-labor income:

$$\text{Prob(work=1=yes)} = \frac{1}{\sqrt{2\pi}} e^{-X\beta^2/2} \tag{9}$$

where $\mathbf{X}$ = {age, age^2, education, male, white, metro, number of children less than age 6, 6–12, 13–18, married, non-labor income, state unemployment rate, and region}. Then, the inverse Mills ratio, λ, is found as the ratio of the cumulative normal density function, divided by the probability density function. An instrument for the return to labor is estimated using an ordinary least squares function of human capital and demographic variables, state dummies, and the inverse Mills ratio. We estimate a wage equation for family heads in all families, and for spouses in married-couple families who work. Then we use this predicted wage and the self-selection variables in the discrete choice and labor supply equations.

The empirical specification of an individual household member's human-capital-based wage is given by the following equation:

$$\ln(\text{wage}) = \beta_0 + \beta_1\text{age} + \beta_2\text{agesq} + \beta_3\text{edu} + \beta_4\text{male} + \beta_5\mathbf{D} + \mu_w, \tag{10}$$

where $\mathbf{D}$ is a vector of demographic variables, including race, marital status, metro/non-metro location, plus labor market variables (state unemployment rate); and μ_w is a normal random error term.

TANF participation is a discrete household choice while labor supply is a continuous, individual one. We aggregate the individual work choice variables to measure household labor supply. Assuming heterogeneity of male and female labor, we define the household's effective labor supply **L** in terms of hours of female labor units as $\mathbf{L} = L_f + eL_m$, where L_f and L_m are the hours spent working by female and male members of the household, and *e* is the ratio of male to female productivity. Furthermore, assuming that wages reflect productivity, the estimate of *e* is given by β_4 in equation (10).

We model the labor supply of those households that participate in the labor force but not in TANF as a continuous variable using the following equation:

$$\ln(\mathbf{L}) = \gamma_0 + \gamma_1 \text{age} + \gamma_2 \text{agesq} + \gamma_3 \ln(wage) + \gamma_4 \mathbf{M'} + \gamma_5 \text{N} + \gamma_6 \lambda_L + \gamma_7 \lambda_T + \mu_h, \qquad (11)$$

where $\ln(\mathbf{L})$ is the natural log of the effective household labor supply defined above; age is the individual age for a single household head or the average age if both spouses are present; *wage* is instrumented as explained; **M** is a vector of exogenous variables including gender, number of children under age 6, number of children between ages 6 and 12, number of children between ages 13 and 18, marital status, and the local unemployment rate; N is family non-labor income (exclusive of transfers); and μ_h is a normal random error term. The error term, if estimated without taking into account the probability of self-selection, would not have a zero mean, so parameter estimates would be biased and inconsistent. With the self-selectivity correction variables λ_L (for labor force participation) and λ_T (for TANF nonparticipation), the disturbance term has a zero mean.

Data

The data about state TANF program parameters are collected from the *1998 Green Book* (U.S. House of Representatives 1998) and from Gallagher et al. 1998. Information about unemployment rates is from the *Monthly Labor Review* (U.S. Department of Labor 1997). The data about individuals and households is from the Survey of Income and Program Participation (SIPP) 1996, wave 3 (U.S. Census Bureau 2000). The 1996 panel is representative at the national and regional levels, but the sample is insufficient at the state or lower levels. For states, administrative record data would provide more observations on participants. The advantage of using the SIPP, however, is that it contains detailed information about the characteristics of and actual choices made by both participants and non-participants, whereas administrative record data contains information only on participants. Also, each family's metro area and state of residence is identified in the SIPP. This facilitates the merging of the state unemployment data with each household observation. To test for regional variation, we fit the models to two subsamples: the midwestern states (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin) and all other states. The variation in TANF program parameters among the midwestern states also will help identify region-specific responses to those policy instruments.

We include categorically eligible families with children, families with sufficiently low assets (Table 1), and non-elderly (<65), non-disabled family heads. The resulting subsample of midwestern states contains observations on 1,418 families; 64 percent of these are married-couple families, and 77 percent live in metro areas. The rest of the U.S. subsample has 4,512 observations; 62 percent are married-couple families, and 79 percent live in metro areas.

All dependent variables were measured in November 1996. A family is recorded as participating in TANF if any member (including any child) is recorded as receiving TANF support during that month. Single heads of household are classified as not working if they report working zero hours during the month, and they are classified as working if they report working one or more hours per week during the month. For married-couple families, the family is classified as not working if the family head and spouse report working zero combined hours during the month, and they are classified as working if the family head and spouse report working a total of one or more hours per week during the month.

Variables from the SIPP used in this analysis include demographic variables, family-composition variables, and a set of structural variables designed to capture differences in labor market conditions and transfer programs. The demographic variables for the family head include gender, age, education level, and a dichotomous variable indicating race (white=1). For married couples, the demographic variables are the average age and average schooling of the spouses as defined earlier. The set of family-composition variables includes number of children under age 6, number of children between ages 6 and 12, and number of children between ages 13 and 18. The set of individual characteristics includes METRO, a 1-0 dichotomous variable indicating that the family lives in a metro area as opposed to a nonmetro area, and UNRATE, the state's November 1996 unemployment rate (U.S. Department of Labor 1997). Also relevant are the observations of actual family unearned income, whether or not the household has a car, pre-existing debt, and assets. Table 2 displays the means and standard deviations of the dependent and independent variables.

Table 3 shows the distribution of the dependent variables: labor force and welfare program participation for all families and by family type. About 11 percent of the asset-eligible families receive TANF in the Midwest sample and 12 percent in the sample of the rest of the states; 88 and 86 percent participate in the labor market, respectively. Households who work are concentrated in the TANF nonparticipation cell: 83 percent of the Midwest sample falls in this category, while for the rest of the United States, 86 percent work and do not participate in TANF.

Among single heads of household, of which there are 512, 76 percent work and 25 percent participate in TANF. Sixty-six percent work and do not participate in TANF; 15 percent do not work and participate in TANF. In contrast, 95 percent of the married-couple families work, and only 2 percent participate in TANF. There are no significant differences in the choices of the single heads of household between the Midwest and the rest of the United States.

Empirical Results

Labor Force and TANF Program Participation Estimates

The dependent variables are the binary variables labor force (L=0/1) and TANF welfare program participation (T = 0/1). FIML estimates of the bivariate probit model of labor force and welfare participation for both samples are presented in Table 4. Variables that are excluded from the labor force participation equation are white, education (edu), debt, the income disregard (i), and the compound variable agesq*nonmetro. Education is excluded in particular to identify the wage effect in labor supply. The variable excluded from the TANF participation equation for identification purposes is the predicted wage. The compound variable $i*b$ is not in the TANF equation because it has no hypothesized relationship with it.

TABLE 2. Definitions, means, and standard deviations of variables

Variable	Midwest (1,418)	Rest of U.S. (4,512)	Description
Age	35.32(8.15)	35.59 (8.36)	Age of head if single head family, and average of age of head and spouse if married couple-family
Agesq	1314.0 (611.2)	1336.4 (626.2)	Age squared
edu	12.53 (2.20)	11.98 (2.7)	Years of schooling of head if single family; average of years of schooling of head and spouse if married couple
Male	0.70 (0.46)	0.69 (0.46)	Dichotomous variable equal to 1 if male adult is present in a family, and 0 otherwise
Married	0.64 (0.48)	0.62 (0.48)	Dichotomous variable equal to 1 if married-couple family, and 0 otherwise
White	0.81 (0.40)	0.73 (0.44)	Dichotomous variable equal to 1 if family head is white, and 0 otherwise
Metro	0.77 (0.42)	0.79 (0.41)	Dichotomous variable equal to 1 if a family lives in metro area, and 0 otherwise
Kids6	0.73 (0.85)	0.74 (0.84)	Number of children in family who are younger than 6 years old in family
Kids13	0.81 (0.91)	0.80 (0.90)	Number of children in family who are 6 and younger than 13 years old in family
Kids18	0.48 (0.70)	0.49 (0.72)	Number of children in family who are 13 and younger than 18 years old in family
Northeast		0.21 (0.41)	Dichotomous variable equal to 1 if family lives in the Northeast region, and 0 otherwise
South		0.48 (0.50)	Dichotomous variable equal to 1 if family lives in the South region, and 0 otherwise
D1*	0.21 (0.41)		Dichotomous variable equal to 1 if family lives in state Illinois, and 0 otherwise
D2	0.10 (0.31)		Dichotomous variable equal to 1 if family lives in state Indiana, and 0 otherwise
D3	0.05 (0.21)		Dichotomous variable equal to 1 if family lives in state Iowa, and 0 otherwise

TABLE 2. continued

Variable	Midwest (1,418)	Rest of U.S. (4,512)	Description
D4	0.04 (0.18)		Dichotomous variable equal to 1 if family lives in state Kansas, and 0 otherwise
D5	0.14 (0.35)		Dichotomous variable equal to 1 if family lives in state Michigan, and 0 otherwise
D6	0.10 (0.30)		Dichotomous variable equal to 1 if family lives in state Minnesota, and 0 otherwise
D7	0.11 (0.32)		Dichotomous variable equal to 1 if family lives in state Missouri, and 0 otherwise
D8	0.03 (0.17)		Dichotomous variable equal to 1 if family lives in state Nebraska, and 0 otherwise
D9	0.16 (0.36)		Dichotomous variable equal to 1 if family lives in state Ohio, and 0 otherwise
UNRATE	4.06 (0.77)	5.54 (1.00)	State unemployment rate
N	44.31 (409.32)	33.44 (99.9)	Family non-labor income exclusive of welfare transfers per month in $
B_{sh}	453.1 (139.82)	457.07(235.41)	Maximum TANF grant per month in $, given participation
b_s	0.57 (0.16)	0.52 (0.19)	The benefit reduction rate is the rate at which additional dollars of earned income reduce the TANF benefit
i_s	104.07 (94.67)	153.70(198.61)	The income disregard is a dollar amount of earned income not counted when calculating the household's transfer
Incbrr	66.35 (59.61)	60.35 (43.06)	Compound variable: income disregard times the benefit reduction rate
Agenom	313.14 (633.15)	285.08(615.13)	Compound variable of age squared and nonmetro
ln(**L**)	4.13 (0.57)	4.01 (0.50)	Natural log of hours worked last week by head if single, or effective hours of work if married-couple family (see text)
ln(wage)	2.23 (0.43)	2.15 (0.44)	Natural log of hourly wage in $
$\ln(\hat{wage})$	2.34 (0.20)	2.09 (0.16)	Predicted value of natural log of hourly wage
L	0.881(0.32)	0.858 (0.35)	Dichotomous variable equal to 1 if family head works if single, and family head and/or spouse work, and 0 otherwise
T	0.106(0.31)	0.120(0.33)	Dichotomous variable equal to 1 if a family participates in TANF, and 0 otherwise

Notes: Standard deviations are in parentheses. The reference state is Wisconsin (0.06 mean and 0.29 standard deviation).

TABLE 3. Distribution of labor force and welfare participation, by family type

	Working		Not working		All	
			MIDWESTERN STATES			
			All family types			
TANF non-participant	1,184	83%	84	6%	1,268	89%
TANF participant	65	5%	85	6%	150	11%
All	1,249	88%	169	12%	1,418	100%
			Single family head			
TANF non-participant	336	66%	48	9%	384	75%
TANF participant	51	10%	77	15%	128	25%
All	387	76%	125	24%	512	100%
			Married-couple family			
TANF non-participant	848	94%	36	4%	884	98%
TANF participant	14	1%	8	1%	22	2%
All	862	95%	44	5%	906	100%
			REST OF THE STATES			
			All family types			
TANF non-participant	3,660	81%	309	7%	3,969	88%
TANF participant	212	5%	331	7%	543	12%
All	3,872	86%	640	14%	4,512	100%
			Single family head			
TANF non-participant	1,947	68%	104	8%	971	75%
TANF participant	227	8%	234	18%	326	25%
All	2,174	76%	338	26%	1,297	100%
			Married-couple family			
TANF non-participant	2,793	87%	205	6%	2,998	93%
TANF participant	120	4%	97	3%	217	7%
All	2,913	91%	302	9%	3,215	100%

Source: U.S. Census Bureau, SIPP 1996 wave 3.

With respect to the state welfare policy instruments, the hypothesis that TANF participation is positively related to the benefit or pay standard (B_{sh}) is verified in both the Midwest region and the rest of the United States. Also as hypothesized, TANF participation is significantly and positively related to the earned income disregard (i_s) but only in the rest of the United States. Higher benefits have a significantly negative effect on the probability that anyone in the family works for a wage in the rest of the United States, but the effect is insignificant in the Midwest. Labor supply is also significantly sensitive to the implicit tax (b_s), the benefit reduction rate on earned income, as hypothesized, only in the rest of the United States. The effect of the compound program variable $i_s b_s$ on labor supply is positive as hypothesized but is not significant in either subsample.

TABLE 4. Bivariate probit model of household TANF program and labor force participation

	TANF Participation		Labor Force Participation	
	Midwest	Rest of U.S.	Midwest	Rest of U.S.
Intercept	1.601 (1.033)	0.376 (0.505)	-1.135 (0.959)	-1.375 (0.474)***
Age	-0.100 (0.043)***	-0.090 (0.022)***	-0.030 (0.050)	0.043 (0.023)*
Agesq	0.001 (0.001)***	0.001 (0.0003)***	0.000 (0.001)	-0.001 (0.000)***
Male	-1.191 (0.357)***	-1.017 (0.137)***	0.197 (0.188)	0.292 (0.101)***
Married	0.004 (0.367)	-0.075 (0.137)	0.793 (0.197)***	0.424 (0.101)***
White	-0.386 (0.135)***	-0.244 (0.060)***		
Kids6	0.213 (0.087)***	0.324 (0.038)***	-0.237 (0.079)***	-0.113 (0.036)***
Kids13	0.082 (0.074)	0.182 (0.035)***	-0.018 (0.066)	-0.069 (0.030)**
Kids18	-0.073 (0.087)	0.108 (0.042)***	-0.025 (0.085)	-0.043 (0.041)
N	-0.0005 (0.0004)	-0.001 (0.0003)***	0.0002 (0.0005)	0.0001 (0.0002)
UNRATE	0.167 (0.102)*	0.103 (0.036)***	-0.084 (0.098)	-0.032 (0.030)
Metro	-0.112 (0.398)	0.020 (0.148)	-0.064 (0.134)	-0.011 (0.068)
$\ln(\hat{wage})$			1.332 (0.391)***	0.925 (0.211)***
Education	-0.090 (0.025)***	-0.032 (0.011)***		
B_{sh}	0.002 (0.001)***	-0.001 (0.000)***	-0.0001 (0.001)***	0.001 (0.000)***
Debtk	-0.001 (0.001)***	-0.003 (0.001)***		
Car	-0.556 (0.139)***	-0.595 (0.066)***	0.407 (0.146)***	0.523 (0.063)***
i	-0.001 (0.001)	0.0005 (0.0002)***		
b	0.149 (0.547)	0.461 (0.197)	-0.087 (0.617)	-0.325 (0.171)*
Incbrr			0.002 (0.002)	-0.004 (0.001)
Agesqnom	-0.0002 (0.0003)	0.0001 (0.0001)		

	Midwest		Rest of the U.S.	
	TANF	Labor Force	TANF	Labor Force
ρ (correlation coefficient)	-0.585 (0.063)***		-0.646(0.029)***	
Log likelihood function	-726.31		-2504.54	

Notes:
*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
***Statistically significant at the 1% level.
Standard errors are in parentheses.

Opportunities, needs, and preferences explain TANF and labor force participation in intuitively reasonable ways that echo the findings in the existing literature. In both the Midwest and the rest of the United States, if the family heads are male, white, and if they have more years of education, then the probability that the family participates in TANF is significantly lower. TANF participation declines with age, but this is less so for older householders with children. Debt appears to substitute for TANF participation in both the Midwest and the rest of the United States. The higher is the pre-existing debt, the lower is the probability that the household participates in TANF. Families with very young children are more likely to participate in TANF and are less likely to be in the labor force. Families with cars are less likely to participate in TANF and more likely to work. Being married and having a higher (predicted) wage have positive and highly significant effects on the probability of wage work in both subsamples.

There are also some differences in behavior between samples from the Midwest and from the rest of the United States. These differences are more apparent from the marginal effects (discussed below). Increased local employment opportunities (lower unemployment rates) and higher non-labor income have statistically significant negative effects on welfare participation only in the rest of the United States. TANF participation is not significantly related to the number of older children in midwestern households but has a positive relation in the rest of the United States.

The cross-equation correlation coefficients for the two participation equations are negative and highly significant in both regional subsamples. This implies that the labor force participation and TANF participation decisions are not statistically independent and indeed should be jointly estimated. Also, it implies that the random disturbances in labor force participation and TANF participation decisions are affected in the opposite direction by shocks from any unmeasured effects.

The total marginal effects of the explanatory variables on the discrete choice probabilities of TANF and labor force participation indicate the relative magnitudes of the factors. In both the Midwest (Table 5) and the rest of the United States (Table 6), we find that the (estimated) wage is by far the most important explanatory variable in both labor force and TANF participation decisions. Midwesterners are more responsive to wages than are those sampled in the rest of the United States, and people on welfare are

TABLE 5. Discrete choice bivariate probit model: marginal effects, Midwest

	Probability of family labor force participation given:		Probability of family TANF participation given:	
Variable	**Participating in TANF**	**Not participating in TANF**	**Family working**	**Family not working**
Intercept	-0.1542 (0.4465)	-0.1105 (0.1259)	0.1037 (0.0976)	0.3409 (0.4307)
Age	-0.0367 (0.0241)	-0.0067 (0.0067)	-0.0003 (0.0049)	0.0050 (0.0215)
Agesq	0.0003 (0.0003)	0.0000 (0.0001)	0.0000 (0.0001)	0.0000 (0.0003)
Male	-0.1831 (0.1327)	-0.0055 (0.0278)	-0.1049 (0.0303)***	-0.4341 (0.1468)***
Married	0.3655 (0.1268)***	0.1074 (0.0279)***	0.0000 (0.0325)	0.0674 (0.1456)
Kids6	-0.0601 (0.0337)*	-0.0263 (0.0103)***	0.0143 (0.0079)*	0.0380 (0.0319)
Kids13	0.0104 (0.0304)	-0.0003 (0.0086)	0.0072 (0.0068)	0.0288 (0.0292)
Kids18	-0.0285 (0.0417)	-0.0054 (0.0114)	-0.0069 (0.0078)	-0.0330 (0.0360)
N	0.0000 (0.0002)	0.0000 (0.0001)	0.0000 (0.0000)	-0.0001 (0.0001)
UNRATE	-0.0003 (0.0456)	-0.0069 (0.0128)	0.0122 (0.0097)	0.0478 (0.0429)
Metro	-0.0551 (0.1063)	-0.0117 (0.0202)	0.0266 (0.0155)*	0.0930 (0.0766)
$\ln(\hat{wage})$	0.6122 (0.1922)***	0.1803 (0.0541)***	-0.1215 (0.0394)***	-0.5269 (0.1752)***
B_{sh}	0.0003 (0.0002)	0.0000 (0.0001)	0.0002 (0.0000)***	0.0007 (0.0002)***
Car	0.0595 (0.0670)	0.0401 (0.0203)**	-0.0507 (0.0146)***	-0.1744 (0.0557)***
b	-0.0058 (0.2834)	-0.0078 (0.0815)	-0.0107 (0.0623)	-0.0268 (0.2723)
Incbrr	0.0009 (0.0007)	0.0003 (0.0002)	0.0000 (0.0002)	0.0001 (0.0007)
White	-0.0886 (0.0353)***	-0.0104 (0.0041)***	0.0018 (0.0029)	0.0157 (0.0247)
Education	-0.0206 (0.0067)***	-0.0024 (0.0007)**	0.0021 (0.0007)***	0.0175 (0.0065)***
Debtk	-0.0002 (0.0001)	0.0000 (0.0000)	-0.0001 (0.0000)***	-0.0005 (0.0002)**
i	-0.0001 (0.0002)	0.0000 (0.0000)	0.0000 (0.0000)	0.0001 (0.0002)
Agesqnom	-0.0001 (0.0001)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)

Notes:
*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
***Statistically significant at the 1% level.
Standard errors are in parentheses.

TABLE 6. Discrete choice bivariate probit model: marginal effects, rest of United States

Variable	Probability of family labor force participation given: Participating in TANF	Probability of family labor force participation given: Not participating in	Probability of family TANF participation given: Family working	Probability of family TANF participation given: Family not working
Intercept	-0.5802 (0.2168)***	-0.2186 (0.0749)***	0.1230 (0.0413)***	-0.2186 (0.0749)***
Age	-0.0038 (0.0102)	0.0038 (0.0036)	-0.0026 (0.0017)	0.0038 (0.0036)
Agesq	0.0000 (0.0001)	-0.0001 (0.0000)	0.0001 (0.0000)***	-0.0001 (0.0000)
Male	-0.1373 (0.0522)***	0.0110 (0.0162)	-0.0771 (0.0117)***	0.0110 (0.0162)
Married	0.1902 (0.0500)***	0.0689 (0.0157)***	0.0071 (0.0103)	0.0689 (0.0157)***
Kids6	0.0336 (0.0166)**	-0.0070 (0.0055)	0.0228 (0.0029)***	-0.0070 (0.0055)
Kids13	0.0160 (0.0154)	-0.0049 (0.0049)	0.0131 (0.0027)***	-0.0049 (0.0049)
Kids18	0.0086 (0.0196)	-0.0032 (0.0065)	0.0074 (0.0032)***	-0.0032 (0.0065)
N	-0.0002 (0.0001)	0.0000 (0.0000)	-0.0001 (0.0000)***	0.0000 (0.0000)
UNRATE	0.0130 (0.0150)	-0.0015 (0.0048)	0.0065 (0.0026)***	-0.0015 (0.0048)
Metro	0.0000 (0.0490)	-0.0011 (0.0120)	-0.0023 (0.0066)	-0.0011 (0.0120)
$\ln(\hat{wage})$	0.4604 (0.1052)***	0.1566 (0.0362)***	-0.0970 (0.0197)***	0.1566 (0.0362)***
B_{sh}	-0.0001 (0.0001)*	-0.0001 (0.0000)***	0.00004 (0.00001)***	-0.0001 (0.0000)***
Car	0.0953 (0.0308)***	0.0661 (0.0103)***	-0.0371 (0.0055)***	0.0661 (0.0103)***
b	-0.0337 (0.0933)	-0.0376 (0.0287)	-0.0241 (0.0153)	-0.0376 (0.0287)
Incbrr	-0.0002 (0.0003)	-0.0001 (0.0001)	0.0002 (0.0001)***	-0.0001 (0.0001)
White	-0.0679 (0.0170)***	-0.0092 (0.0023)***	-0.0014 (0.0016)	-0.0092 (0.0023)***
Education	-0.0088 (0.0032)***	-0.0012 (0.0004)***	0.0014 (0.0003)***	-0.0012 (0.0004)***
Debtk	-0.0008 (0.0002)***	-0.0001 (0.0000)***	0.00003 (0.00001)**	-0.0001 (0.0000)***
i	0.0001 (0.0000)***	0.00002 (0.0000)***	0.0000 (0.0000)	0.00002 (0.0000)***
Agesqnom	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)

Notes:
*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
***Statistically significant at the 1% level.
Standard errors are in parentheses.

more responsive to wages than are people not participating in TANF. A 10 percent increase in the (predicted) wage increases the probability of wage work for midwestern TANF-participating families by 6.1 percent (4.6 percent for the rest of the United States), and by 1.8 percent (1.6 percent for the rest of the United States) for non-TANF participating families.

Midwestern households are also almost twice as responsive to other workplace opportunities and constraints than are households in the rest of the United States. Having both spouses present increases the probability that someone in the household engages in wage work by 36.6 percent for the Midwest and by 19 percent for the rest of United States for TANF-participating families, and by 10.7 percent for the Midwest (6.9 percent for the rest of the United States) for TANF-nonparticipating families. And, for midwestern TANF-participating families, one additional child under age six decreases the probability of working by 6 percent. The effect of additional young children is half as strong in the rest of the United States.

TANF participation is lower the higher is the return to work. A 10 percent increase in the wage decreases the probability of TANF participation by 1 percent for a working midwestern family and by 5 percent for a non-working midwestern family. The net effect of higher wages is to increase self-sufficiency through increased labor force participation. The 5 percent predicted decline in TANF participation was offset, as noted above, by the 6 percent predicted increase in midwestern poor households participating in the labor force as wages rise.

The work requirements imposed on TANF participants under PROWRA appear to be especially effective in the Midwest. If that were not the case, higher TANF benefits would be negatively associated with workforce participation. Our findings show that TANF benefits are not significantly related to workforce participation in the Midwest. In the rest of the United States, a $100 increase in TANF benefits (about a 25 percent increase) decreases the labor force participation probability by less than 1 percent.

Increases in the TANF benefits also affect TANF participation rates as hypothesized. A $100 increase in TANF benefits increases the probability of TANF participation by 2 percent for midwestern working families and by 7 percent for non-working families. This implies that the marginal utility of additional income is non-linear: it is higher at low levels of income. The rest of the United States is less responsive. A $100 increase in TANF benefits results in an increase in TANF participation of 0.4 percent for working families, and an increase of 1 percent for non-working families.

Having a car is important in both decisions. In both the Midwest and in the rest of the United States, having a car increases the probability of labor force participation. In addition, among working families, having a car contributes negatively to TANF participation. These findings suggest that cars are critical for economic self-sufficiency. Among non-working households in the Midwest, having a car is the fourth largest negative effect on TANF participation. But in the rest of the United States, having a car contributes positively to TANF participation among non-working families.

Wage and Labor Supply Equations

The bivariate probit model explains the discrete choices of participating in the TANF program and/or the work force. We now focus on the continuous choice of how much to work, controlling for self-selection out of welfare dependency and into the workforce (i.e., given discrete choice 3: ($\mathbf{L}^*$,T^*) = (1,0)). First, we estimate a wage equation for family heads in all families and for spouses in married-couple families that work. Then we use the predicted wage (or average wage of head and spouse) in the labor supply equation in place of the actual wage as an instrumental variable. In this equation for hours of effective supplied labor, we also include the inverse Mills ratios for self-selection into the labor force (λ_L) and out of welfare (λ_T).

The estimated wage equations (10) for the Midwest and the rest of United States are reported in Table 7. Wages are concave in age, peaking at 52 in the rest of the United States, compared with 48 in the Midwest. The coefficients with respect to the other variables are consistent with other labor studies (Neal and Johnson 1996; Blau and Kahn 2000). Wages are higher for males and whites. However, we find interesting regional variation. One additional year of schooling (higher labor productivity) has the direct effect of increasing the wage by 5.7 percent (Midwest) compared to 3.8 (rest of the United States). Metro wages are higher by 6.8 percent for the Midwest and 5.7 percent for the rest of the United States. Wages in the South are lower by 10.4 percent relative to wages in the West. The joint test that all the non-intercept coefficients (except for the

TABLE 7. Estimates of the individual log wage equation

	ln(wage)	
Explanatory Variables	**Midwest**	**Rest of U.S.**
Intercept	-0.03 (0.28)	0.841 (0.178)***
Age	0.07 (0.01)***	0.031 (0.007)***
Agesq	-0.0007 (0.0001)***	-0.0003 (0.0001)***
Edu	0.057 (0.008)***	0.038 (0.004)***
Married	-0.10 (0.056)*	0.034 (0.040)
Male	0.314 (0.06)***	0.137 (0.046)***
White	0.077 (0.034)**	0.055 (0.017)***
Metro	0.068 (0.029)***	0.057 (0.016)***
UNRATE	-0.060 (0.027)**	0.002 (0.008)
λ	0.154 (0.124)	-0.130 (0.095)
D1	0.104 (0.066)	
D2	-0.019 (0.055)	
D3	0.030 (0.068)	
D4	0.110 (0.073)	
D5	0.039 (0.062)	
D6	0.043 (0.053)	
D7	0.071 (0.061)	
D8	-0.052 (0.075)	
D9	0.033 (0.069)	
Northeast		-0.009 (0.021)
South		-0.104 (0.017)***
R^2	0.189	0.166
F Statistic	16.61	65.71
Number of observations	1,306	3,635

Notes:
*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
***Statistically significant at the 1% level.
Standard errors are in parentheses.

coefficient on the selection term) are zero is rejected. The sample F-value is 11.03 (the critical value is 1.75). The R^2 is 19 percent for the Midwest sample. The sample F-value for the rest of United States is 39.22 (the critical value is 1.83) and the R^2 is 17 percent.

The labor supply equations (11) are reported in Table 8. The findings reinforce and detail our discrete choice model results in showing that the midwestern poor are more responsive to labor market opportunities than are the poor in the rest of the United States. The household labor supply response to an increase in wage is positive and statistically

TABLE 8. Instrumental variable estimates of the family labor supply equation

	Midwest	Rest of U.S.
Explanatory Variables	**ln (L)**	**ln (L)**
Constant	4.435 (0.235)***	3.973 (0.168)***
Aget	-0.057 (0.017)***	0.001 (0.007)
Agetsq	0.001 (0.000)***	0.000 (0.000)
UNEMPR	-0.030 (0.018)	-0.015 (0.008)*
Kids6	-0.063 (0.025)***	-0.039 (0.012)***
Kids13	-0.025 (0.023)	-0.022 (0.010)**
Kids18	0.050 (0.027)*	0.008 (0.011)
Male	0.077 (0.061)	-0.005 (0.017)***
Married	0.599 (0.052)***	0.148 (0.031)***
Metro	0.027 (0.038)	0.322 (0.037)
$\ln(\hat{wage})$	0.256 (0.094)***	-0.004 (0.067)
N	0.0001 (0.0001)	-0.0001 (0.0001)
λ_L	0.120 (0.085)	-0.293 (0.100)***
λ_T	-0.120 (0.085)	-0.018 (0.057)
R^2	0.278	0.254
F Statistic	34.11	95.39
Number of observations	1,164	3,660

Notes:
*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
***Statistically significant at the 1% level.
Standard errors are in parentheses.

significant only in the Midwest. The wage elasticity in the Midwest is 0.256 while in the rest of the United States it is not significantly different from zero. Earlier we showed that a higher wage encouraged more work force participation in both the United States and in the Midwest, but we showed that the marginal effect on that discrete choice was stronger in the Midwest. That finding is reinforced by the evidence that there is a statistically significant labor supply response to higher wages only by the midwestern poor.

Gender does not matter with respect to labor supply in the Midwest, but it does matter in the rest of the United States. In the discrete choice model, we found no significant relationship between the gender of the household head and household labor force participation in the Midwest (Table 5). The effect was significantly negative, however, among TANF-participating families in the rest of the United States (Table 6). In the continuous model of labor supply, we also find that male heads of household are significantly negatively related to the number of effective hours worked by adults in non-midwestern households, even controlling for the variables indicating that the head is married with the spouse present.

In addition, labor supply from households with children is concave in age in the Midwest but unrelated to age in the rest of the country. Fewer and fewer hours are worked the older is the midwestern householder with children. This lends detail to the discrete choice model in which labor force participation was not significantly related to age in either region.

Another difference between the two samples is that the presence of married-couple families increases labor supply four times as much in the Midwest (59.9 percent) than in the rest of the United States (14.8 percent). Also, the presence of one additional child under age six decreases Midwest household hours of work by 6 percent, while in the rest of the United States, household work hours decline by 4 percent for each additional child.

Conclusions

While some states had waivers, prior to the 1996 PROWRA, welfare program eligibility criteria and payment rates were common nationwide. Given the low cross-section variation, it was difficult to estimate how welfare program policy instruments affected household behavior. In this paper, we have tested and accepted the null hypothesis that welfare program parameters do not affect midwestern households' decisions to work. We reject the null hypothesis, however, for the case of the rest of the United States. Outside the Midwest, as the TANF benefit rises, the probability of wage work falls. The policy-relevant interpretation is that the new requirements on welfare recipients to work appear to bind in the Midwest but not in the rest of the United States. Future research might investigate why TANF still appears to substitute for labor force participation in non-midwestern states.

Furthermore, in non-midwestern states, the higher is the implicit tax on earned income (the benefit reduction rate), the lower is the probability that someone in the household works. The effect is insignificant in the Midwest. Thus, we can conclude that differences across state welfare programs can lead to different labor force participation outcomes across the United States. We can also conclude that since household responses to welfare program parameters do differ regionally, state-tailored TANF programs should be more efficient than a one-size-fits-all national program.

We also tested and rejected the null hypothesis that welfare program parameters do not affect TANF participation. Many eligible households do not participate in welfare programs because the costs of participating outweigh the benefits. These costs include out-of-pocket costs, the costs of using up limited eligibility time, and the psychic costs or stigma. Our estimates show, however, that there will be fewer program participants the lower are the benefits in both the Midwest region and in the rest of the United States. However, the ability to contain budgetary exposure by lowering pay standards is greater in the Midwest than in the rest of the United States. The marginal effects on TANF participation probabilities of the level of TANF benefits (B_{sh}) are at least five times larger in the Midwest. We also predict that there will be more program participants in non-midwestern states that offer higher earned income disregards. The higher are earned income disregards, the larger are the TANF benefits for participating household heads who work.

Our findings about the relative importance of labor market opportunities echo the findings in the recent literature. Our analysis shows that (estimated) wages have larger effects on both labor force and welfare program participation discrete choices across the United States than on welfare program policy instruments (Tables 5 and 6), comparable to what was shown by Keane and Moffitt (1998). However, we find that only the midwestern poor increase hours worked in response to increases in wages (Table 8). These are encouraging findings for midwestern proponents of welfare reform, and the observed heterogeneity in household behavior across regions provides a rationale for the devolution of authority over welfare programs to states.

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