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Does Welfare Play Any Role in Female Headship Decisions?

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Abstract

During the last thirty years, the composition of white and black families in the United States has changed dramatically. In 1960, less than 10 percent of families with children were headed by a single mother, while in 1990 more than 20 percent of families with children were female-headed households. A large body of research has focused on the role of the U.S. welfare system, and in particular, the Aid to Families with Dependent Children (AFDC) program, in contributing to these dramatic changes in family structure. Most studies use cross-sectional data and identify the effect of welfare on female headship through interstate variation in the AFDC program. Recent research finds that controlling for state effects has a large impact on the estimated welfare effect. This paper examines why state effects matter for estimating the role of welfare in female headship decisions by examining the importance of individual effects and policy endogeneity. A natural explanation for why state effects matter is that the composition of the population across the states differs, and the composition is related to the generosity of the state's welfare program. If that is true, then controlling for individual effects should have the same result as controlling for state effects. Second, the endogeneity of AFDC policy is examined by including controls representing the determinants of state welfare generosity. The results show that after controlling for individual effects, there is no evidence that welfare contributes to increasing propensities to form female-headed households for either whites or blacks. Further, the results suggest that welfare-induced migration among blacks leads to an upward bias in the estimated welfare effect in previous studies.

Does Welfare Play Any Role in Female Headship Decisions?

1. INTRODUCTION

During the last thirty years, the composition of families in the United States has changed dramatically. In 1960, less than 10 percent of families with children were headed by a single mother, while in 1990 more than 20 percent of families with children were female-headed households (U.S. Bureau of the Census 1961, 1991a). These trends are common to both white and black families, although the increase among black families has been more dramatic. There have also been sizable increases in the number of out-of-wedlock births and teenage pregnancies among blacks and whites. In 1989, fully two-thirds of all births among blacks were to unmarried mothers (U.S. House of Representatives 1992).

One reason why this increase in the percentage of families headed by single women is of concern is because the economic well-being of single-parent families is typically below that of two-parent families. In 1990, the poverty rate among female-headed households with children was 45 percent compared to the rate of 8 percent among two-parent families (U.S. Bureau of the Census 1991b). Over half of all families in poverty are now accounted for by female-headed households. This disproportionate representation of female-headed households among the poor population has led to the term "feminization of poverty." Not only are female heads of household more likely to be poor in a given year, but they are also more likely to have longer spells of poverty (Bane and Ellwood 1986) and are disproportionately represented among the persistently poor (Duncan 1984). There is evidence that these trends are being transmitted through generations: female children raised in female-headed households are more likely to drop out of high school, have an out-of-wedlock birth, and become heads of household themselves (McLanahan 1988).[1]

These trends have stimulated a large body of research exploring the potential explanations for these striking changes in family structure. Much of the research has focused on the role of the U.S. welfare

[1]One should be careful in interpreting these events causally. It may be that those women who become female heads of household are more prone to poverty than those who marry, and that even if they marry, they might still have had a higher propensity to be poor.

system on family structure decisions. The Aid to Families with Dependent Children (AFDC) program provides cash benefits primarily to single parents with children, and eligibility in the program is restricted to those families with both low income and low asset levels.[2] In addition, all AFDC participants are eligible to receive benefits through the food stamp and Medicaid programs. Because these benefits are generally not available to two-parent families, it is argued that the U.S. welfare system encourages divorce, separation, and the delay of marriage and remarriage (for example, see Murray 1984). Other explanations for the increase in female headship over the last two decades include the reduction in the number of marriageable men (resulting in sex ratio imbalances) because of high unemployment, incarceration, and mortality rates (Wilson and Neckerman 1986); the increase in female employment; and the fall in relative wages between men and women.[3]

It is of policy interest to determine to what extent our welfare system contributes to the increasing number of female-headed households. Becker (1973, 1974, 1981) presents a model of marriage whereby women choose marriage (or female headship) by comparing the utility inside and outside marriage. An implication of this model is that higher AFDC benefits (generally available only outside marriage) will lead to higher rates of female headship. AFDC benefits are set at the state level and exhibit enormous variation across states. In 1991, maximum benefits for a family of three ranged from $694 in California and $680 in Connecticut, to $288 in Indiana and $120 in Mississippi (U.S. House of Representatives 1992).

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[2]In some states, benefits are available to eligible two-parent families under the AFDC-Unemployed Parent (UP) program. However, the eligibility requirements are more restrictive. At least one parent in the two-parent family must have a history of a significant attachment to the labor market and cannot be working more than 100 hours per month. Despite the fact that twenty-six states provided benefits under the UP program in 1991, only 6 percent of the caseload received benefits under the UP program. The Family Support Act of 1988 requires that all states set up UP programs by 1990. Hoynes (forthcoming) examines the effects of AFDC-UP on labor supply and welfare participation; Winkler (1993) considers the effect of expanding the UP program on family structure.

[3]See Garfinkel and McLanahan (1986) and Ellwood and Crane (1990) for a summary of literature that explores the role of changes in labor markets on family composition. Espenshade (1985) provides a general overview of the determinants of trends in marital rates.

Women who live in states with relatively high AFDC benefits, therefore, should be more likely to choose female headship then women who live in relatively low benefit states.

This interstate variation in benefits forms the basis for estimating the effect of AFDC on female headship. As reviewed in Moffitt (1992), most studies use cross-sectional data and estimate a female headship equation as a function of individual characteristics, benefits, and, in some studies, other state characteristics. The results from this research are mixed. As summarized in Groeneveld, Hannan, and Tuma 1983, the early literature found insignificant effects of the welfare system on family structure. More recent evidence implies that the welfare system has a positive and significant, yet modest, effect on the propensity to form female-headed households (Danziger et al. 1982; Ellwood and Bane 1985; Moffitt 1990a; Hoffman, Duncan, and Mincy 1991; Schultz 1994; Winkler 1993).

There are three reasons why the welfare effect from these studies may be biased. First, social norms, cultural effects, and religious influences are likely to play an important role in family structure decisions, and are largely unobservable to the researcher. As discussed by Ellwood and Bane (1985), if these largely unobservable influences are correlated with the state welfare benefit, then, appealing to standard omitted variable bias arguments, the welfare benefit effect will be biased. For example, if the population in a given state believes strongly in the two-parent family, the state may not have much support for an AFDC program and, hence, offer low benefits. Or a state which is more accepting of nontraditional family structures may favor a higher level of support for female-headed households. In a cross-sectional study you cannot identify both state fixed effects and welfare effects. Formally, if welfare benefits are correlated with unmeasured state attitudes, estimates from these studies will be biased. If the unmeasured effects are positively (negatively) correlated with welfare benefits, then the estimated welfare effect will overestimate (underestimate) the true effect.

Two studies provide evidence that ignoring state effects can lead to incorrect conclusions about the impact of welfare on female headship. Ellwood and Bane (1985) include an estimate of the *likely* welfare benefit (instead of simply welfare benefits) by adjusting the benefit for the likelihood of receiving AFDC

benefits if single parenthood is chosen. By creating intrastate variation in benefits, they estimate a benefit effect while controlling for state effects. Moffitt (1994) estimates a model of female headship using state fixed effects and controls for state AFDC benefits. He is able to identify both effects by pooling several cross sections of the Current Population Survey. Moffitt finds that adding state effects changes the benefit effect for white women from positive and significant to negative and significant. Interestingly, for black women, the state effects did not matter.

A second potential problem is the endogeneity of state policy. Besley and Case (1994), using the example of workers' compensation benefits, explore the possibility that state policy is affected by political and economic conditions, and voter preferences. They argue that if these policy determinants are related to the variable of interest, their omission can lead to erroneous conclusions as to the importance of policy. While the determinants of state AFDC benefits have been examined (Darity and Myers 1983; Plotnick and Winters 1985; Moffitt 1990b), they have not been incorporated in the empirical literature on the effects of welfare on family structure. If these policy-setting variables are related to female headship, then omitting these variables may also lead to biased estimates of the AFDC effect.[4]

A third problem is the importance of omitted individual effects. There are important determinants of individual family composition decisions, such as marriage and female headship, which are not observed by the researcher. It is possible that these omitted effects may be correlated with the generosity of AFDC benefits through selected migration over time. This would result in a correlation between welfare benefit levels and the distribution of the population with respect to the propensity to be a female head. This has not been examined in the literature.

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[4]Besley and Case (1994) derive the bias that results from omitting these policy determinants under several standard models in the literature (e.g., fixed-effect models and difference-in-difference models). They point out that controlling for observable determinants of policy may not be sufficient since unobservable determinants may be correlated with the error in the headship equation. They propose an instrumental variables approach to estimating the effect of policy on individual outcomes. In practice, they find it difficult to find good instruments for identifying the policy determination equation.

This study takes as its starting point that omitting state effects may lead to a bias in the estimated effect of AFDC on female headship decisions. I explore why state effects matter for estimating the role of welfare in female headship decisions by examining the importance of individual effects and policy endogeneity. A natural explanation for why state effects matter is that the composition of the population across the states differs, and the composition is related to the generosity of the state's welfare program. The interpretation of the state effect in this case is some average of the attitudes of its population. If that is true, then controlling for individual effects should have the same result as controlling for state effects. Second, the endogeneity of AFDC policy is examined by including controls representing the determinants of state welfare generosity. To do this, data from the Panel Study of Income Dynamics (PSID) is used to estimate a model of female headship controlling for welfare benefits, characteristics of the woman, characteristics of the state, year effects, state effects, and individual effects. Pooled cross-sectional data allow for the identification of a welfare effect and a state effect. Panel data, containing observations on persons over time, allow for the identification of welfare, state, and individual effects.

The results of the analysis imply controlling for unmeasured individual effects has a dramatic effect on estimates of the role of welfare in family structure. The bias in the estimated welfare effect for whites can be attributed to either omitted state or individual effects. After controlling for individual effects, there is no impact of either state fixed effects or other state variables on the estimated welfare effect. Among blacks, individual effects matter, but, consistent with previous studies, state effects do not. Overall, once the model is correctly specified to include individual effects, there is no evidence that welfare contributes to increasing propensities to form female-headed households for either whites or blacks.

The rest of the paper is organized as follows. Section 2 briefly reviews the existing literature on female headship. Section 3 presents the economic model and empirical implementation. Section 4 discusses the data used in the analysis. Section 5 presents the results. Concluding remarks are provided in Section 6.

2. PREVIOUS EVIDENCE ON THE ROLE OF AFDC ON FEMALE HEADSHIP

There has been a great deal of research exploring possible explanations for the recent trends in the family structure in the United States. The current discussion, however, is limited to summarizing the existing evidence on the effect of welfare programs on female headship. Other studies explore the role of welfare on the probability of divorce (Hoffman and Duncan 1993; Dechter 1992), remarriage (Hoffman and Duncan 1988), subfamily formation (Ellwood and Bane 1985; Hutchens, Jakubson, and Schwartz 1989), transitions to female headship (McLanahan 1988), and out-of-wedlock childbearing (Ellwood and Bane 1985; Plotnick 1990; Duncan and Hoffman 1990).[5]

The early literature on the effects of AFDC on female headship is based primarily on state, SMSA, or city-level analyses. The results from this literature are mixed and find no compelling evidence that AFDC has a significant effect on female headship decisions.[6] The more recent literature, using a variety of cross-sectional data sets, shows a significant and positive, but modest, effect of welfare on female headship. Danziger et al. (1982), used data from the Current Population Survey (CPS) and provide the first formalization and estimation of Becker's (1973, 1974, 1981) model of marital formation. They estimated the earnings and income available in both marriage and female headship and found significant effects of AFDC. Schultz (1994) extends the work by Danziger et al. by modeling fertility as well as earnings and marital status. He finds a consistently positive effect of welfare on female headship for whites, but somewhat more mixed results for blacks. Studies based on a reduced form of Becker's model have also found significant effects of welfare on female headship. These studies typically model the probability of being a female head as a function of individual characteristics and state characteristics

[5]For a summary of the literature on the effect of welfare on various measures of family composition, see Moffitt 1992.

[6]Reviews of this literature can be found in Groeneveld, Hannan, and Tuma 1983; Bishop 1980; Wilson and Neckerman 1986; and Garfinkel and McLanahan 1986.

(Moffitt 1990a; Winkler 1993). Because these studies rely on cross-state variation in the welfare benefits to estimate the welfare effect, they are likely to suffer from the three sources of bias due to omission of state and individual effects and controls for policy determination. If these unobservable effects are correlated with the benefit variable, then, using standard omitted variable arguments, there will be a bias in the estimated welfare effect.[7]

There is evidence concerning the importance of omitting state effects. The few studies that have attempted to correct for unmeasured state influences show significant effects on the estimated welfare effect. Ellwood and Bane (1985) were the first to raise the issue of the potential bias in the welfare estimate. They adjusted welfare benefits in the headship equation by the likelihood of participating in AFDC, if headship was chosen. This created intrastate variation in the benefit variable, which then allowed them to estimate state fixed effects.[8] While they considered many outcome variables (divorce, female headship, out-of-wedlock childbearing) welfare was found to have the largest effect on the probability of living independently. Moffitt (1994) uses over twenty years of pooled cross-sectional data from the CPS to estimate a female headship model with fixed and random state effects. Controlling for unmeasurable state effects was found to diminish the role of welfare for whites but to increase the estimated welfare effect for blacks. There has not been any examination of the importance of individual effects.

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[7]While this paper focuses on the female headship decision as the outcome variable, other outcomes such as divorce, separation, out-of-wedlock births, and teenage pregnancy have been analyzed in this same framework. The following comments about the potential bias in the estimated benefit effect also apply to those studies.

[8]Ellwood and Bane use a two-step procedure. They estimated an AFDC participation equation for all female heads of household in the sample. The estimates from that equation were used to predict participation probabilities for *each* woman in the sample. The benefit variable in the female headship equation is then replaced with "likely" benefits by multiplying benefits by the estimated participation probability. Because this method relies on a sample of female heads of household to estimate the participation effect, any correlations between the participation decision and female headship decision could create a bias in the estimated participation probabilities. For example, if female heads of household are more likely to participate in AFDC for unmeasurable reasons, then this method will overestimate the participation probabilities for married women.

Darity and Myers (1983), Plotnick and Winters (1985), and Moffitt (1990b) examine the determinants of AFDC benefits. Plotnick and Winters (1985) consider the determinants of state-level AFDC benefits and find that higher benefits are associated with states with higher per capita income, higher density of the poor population, higher welfare recipiency rates, lower levels of illegitimacy among recipients, and lower food stamp levels. Darity and Myers consider a simultaneous model of female headship and benefit determination using annual time series data for the United States. They find that after controlling for the endogeneity of benefits, AFDC does not influence marriage rates.[9] Moffitt (1990b) found higher state income and lower food stamp benefits to be associated with higher AFDC benefits.[10]

3. AN EMPIRICAL MODEL OF AFDC AND FEMALE HEADSHIP

The fundamental theory of marital formation and dissolution was developed by Becker (1973, 1974, 1981) and most empirical studies of family formation begin with some version of his model. Becker's model is based on the proposition that a woman will choose marriage when the economic benefits (or utility) inside marriage exceed the economic benefits outside marriage. His theory implies that marriage is particularly advantageous if there is specialization between the partners. That is, one partner specializes in market work while the other specializes in home production. Implications of this model are that increases in the earnings or wages of the potential spouse will increase the probability of marriage while increases in any benefits available outside marriage, such as welfare benefits, will decrease the probability of marriage. Extensions of Becker's model show that an increase in the woman's wage can have

[9]It is not clear how they identify the effects of AFDC since they did not indicate any instruments for the AFDC determination equation. The instruments for female headship are unemployment rates and population ratios.

[10]The endogeneity of area policies have been examined in other applications. Besley and Case (1994) consider the effect of workers' compensation benefits on labor market outcomes, Rosenzweig and Wolpin (1986) consider the effect of family planning programs on health outcomes, and Poterba (1994) considers how states respond to periods of fiscal crisis.

an ambiguous effect on the probability of marriage. On one hand, an increase in earnings of the woman increases family income, which can have a stabilizing effect on the marriage. But this increase in earnings also facilitates independence from the husband, which can lead to a decrease in marriage.[11] Ross and Sawhill (1975) refer to these two effects as the income and independence effects.

In the spirit of Becker's model, consider the determinants of the discrete choice of female headship versus marriage. The utility function,

$$U(FH, W^f, W^m, B, X) \tag{1}$$

represents the maximum utility associated with choosing female headship (FH=1) or marriage (FH=0). Maximum utility associated with marriage is a function of the woman's wage, W^f, her potential spouse's wage, W^m, welfare benefits, B, and the woman's characteristics, X. In choosing female headship, the woman loses access to the potential spouse's wages, W^m, but gains access to welfare benefits, B.[12] The woman then chooses the state with the highest utility.[13]

If FH^* is defined as the difference in the maximal utility between the two states, then the woman will choose female headship if FH^* is greater than zero:

$$FH^* = U(1, W^f, 0, B, X) - U(0, W^f, W^m, 0, X) \tag{2}$$

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[11]Becker focuses on the independence effect as the main implication of increasing women's labor market opportunities. An increase in earnings of the woman implies that the gains to specialization are reduced, which will have a negative impact on the probability of marriage.

[12]The main benefits of the U.S. welfare system for families include cash benefits under the Aid to Families with Dependent Children program and in-kind benefits through the food stamp and Medicaid programs. In some circumstances, these benefits are available to two-parent families. While the empirical implementation will take this into account, the remainder of this theoretical discussion will assume, for simplicity, that benefits are available only to single mothers.

[13]This is a myopic model of marriage where the utility is reevaluated each period. A dynamic model of marital status based on a search model is a natural extension, but has yet to be developed in the literature.

$$FH = \begin{cases} 1 & \text{if } FH^* > 0 \\ 0 & \text{otherwise} \end{cases} \tag{3}$$

In order to evaluate the probability that a woman chooses female headship or marriage, we need to know the woman's wage and her spouse or potential spouse's wage. However, the difficulty is that we observe a spouse's wage only if the woman is married and the spouse is working, and we observe a woman's wage only if she is working. If we assume that wages are a function of the woman's characteristics (X) and labor market variables (L), then we can replace both wage variables by their determinants. Therefore, the effect of earnings of the woman and her potential spouse enter implicitly through their determinants.[14] While the results from this reduced form model cannot be used to determine the importance of changes in the employment and earnings of men and women, they are appropriate to explore the role of welfare benefits in the presence of regional or state effects.[15]

Assuming a linear form for the indirect utility function and adding an error term, the difference in utility becomes:

$$FH^*_{its} = \beta_0 + \delta_1 B_{ts} + \delta_2 UP_{ts} + \beta_1 X_{its} + \beta_2 L_{ts} + \nu_{its} \tag{4}$$

where the subscripts *its* correspond to individual *i* in period *t* living in state *s*. Welfare benefits are captured through two variables: state-level AFDC benefits (B_{ts}) and a dummy variable indicating whether state *s*

[14]Alternatively, if one is interested in determining the importance of labor market factors, both W^f and W^m need to be estimated. The approach used in the literature is to estimate a wage equation based on the sample of spouses of married women and to use those estimates to predict the spouse's wages for the entire sample of women (Danziger et al. 1982; Schultz 1994; Duncan and Hoffman 1990; Hoffman, Duncan, and Mincy 1991). The covariates used to estimate the wage equation include characteristics of the wife, and local labor market variables. Estimating earnings or income in the counterfactual state, however, can be problematic. We observe only the wage of the spouse for those women who are married, and if there are unobservable factors that affect female headship which also affect the earnings of the potential spouse, then this method will yield biased estimates for the wage estimates. For example, if women who are married have higher marriage opportunities, then we will overestimate spouse's wages for female heads of household. While fully accounting for this correlation in the unobservable components requires estimating a simultaneous model, a two-stage estimation method has been used (Schultz 1994; Duncan and Hoffman 1990).

[15]This reduced form approach has been used frequently in the literature (Ellwood and Bane 1985; Moffitt 1990a, 1994; Winkler 1993).

offered AFDC benefits to two-parent families in period t (UP_{ts}).[16] Higher welfare benefits are expected to increase the probability of female headship. In about half the states, benefits are available to eligible two-parent families through the AFDC-UP program. All else being equal, we would expect that by offering UP benefits, the economic gain to being a female head of household would be reduced. However, the eligibility rules are more restrictive for UP families and thus the program is not on par with the program for single mothers. Labor market variables, which control for wage opportunities, are captured by L_{ts}.

The error term ν_{its} is specified as

$$\nu_{its} = \lambda_t + \gamma_s + \alpha_i + Z_{ts}\,\eta + \epsilon_{its} \qquad (5)$$

where the λ_t are year effects, γ_s are state fixed effects, α_i are individual effects, and the ϵ_{its} are assumed to be *iid* errors. Year effects are included to capture any common trends in social norms and expectations or other determinants of marital decisions. The state effects capture time invariant factors that influence female headship and which are shared by all residents of the state. The individual effects capture the unobserved factors at the individual level that do not change over time. The state variables, Z_{ts}, represent the possible determinants of state AFDC benefits.

If either the state effects or individual effects are correlated with the benefit variable B_{ts}, then omitting γ_s or α_i will lead to a biased estimate of the welfare effect, δ_1. It has been shown that the state effects are correlated with benefits, and the substantive results change when they are included (Ellwood and Bane 1985; Moffitt 1994). In this study, the focus is on examining why state effects matter. One hypothesis that will be explored is that states differ in the composition of their population, which is in turn correlated with the state benefit level. One interpretation of a "state" effect is that it represents an aggregation of the preferences of the state residents.[17] If so, then controlling for individual effects should

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[16]In the empirical results, B_{ts} is measured by the combined benefits through the AFDC, food stamp, and Medicaid programs.

[17]This was Ellwood and Bane's interpretation of the omitted state effects. Another interpretation is that the effects capture other characteristics of the state's welfare program not captured by B_{ts}, such as the availability of education and training services, conditions at the welfare offices, and so on. Evidence

have the same impact (on the estimated welfare effect) as controlling for the state effects. If families move over time, however, then the state effects will not necessarily capture the same influences as the individual effects. Therefore, if sufficient numbers of families move over the course of the PSID data (interstate migration is observed in the PSID), then individual effects can be identified independently of state effects.

A second hypothesis is that the state welfare policy is endogenous. In particular, suppose that state benefits are influenced by economic, demographic, and political variables captured in Z_{ts}. Omission of these variables may also lead to a bias in the estimated welfare effect.

Most of the literature follows the approach in (4) but, because of the reliance on a single cross-sectional data set, does not identify the components of the error structure in (5). In the current application, the use of panel data allows for the identification of both state and individual effects.

A linear probability model (LPM) is used to estimate the female headship equation using the error structure in (5). The error components are estimated as fixed effects using standard panel estimation procedures (for example, see Tsaio 1986). The LPM model is used because of the infeasibility of estimating the probit or logit models with individual fixed effects for this application.[18] The limits to using the LPM, however, are well-known (for example, see Maddala 1983). To check the sensitivity to the LPM assumption, some specifications of the model are estimated using a mixed logit model with state fixed effects and individual random effects (Heckman and Singer 1984). The likelihood function for the mixed logit model is presented in Appendix A.[19]

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to be presented later discounts the importance of the latter interpretation.

[18]Chamberlain (1980) shows that a fixed-effects conditional logit model can be used to estimate individual fixed effects in a discrete choice model. The conditional likelihood approach implies that the fixed effects are identified by the *switchers* (e.g., those who transition between female-head and non-female-head status) in the data set. In this application, the sample size of switchers is not sufficient to implement this approach.

[19]The mixed logit model cannot be used to examine the hypothesis that omitted individual variables are driving the state fixed-effect results because, by definition, the discrete distribution describing the individual effects is assumed to be independent of the covariates in the model.

4. DATA

The main data used for this analysis are drawn from the Panel Study of Income Dynamics (PSID). The PSID is a longitudinal data set collected by the Institute for Social Research (ISR) at the University of Michigan and which began in 1968 with a sample of about 5,000 households containing 18,000 individuals. All members (and descendants) of these original survey families have been reinterviewed annually such that, by the twenty-second year of the panel, more than 38,000 individuals have participated or are currently participating in the survey. All estimates presented here are based on the 1968–1989 (or Wave 22) sample of the PSID. The original 1968 sample consists of two subsamples: a nationally representative subsample of 3,000 households (Survey Research Center or SRC subsample) and a subsample of 1,900 households selected from an existing sample of low-income and minority populations (Survey of Economic Opportunity or SEO subsample). To adjust for this nonrandom composition, the PSID includes weights designed to eliminate biases attributable to the oversampling of low-income groups and to attrition. All results presented here use the weights provided by the PSID.

The estimation data set includes all women aged 16–50 who are either married or household heads and who have children. The dependent variable in the empirical analysis is equal to one if the woman is a female head, and zero otherwise.[20] An observation is created for each year that the woman satisfies this sample selection condition. The estimation data set contains a total of 59,940 observations for 3,808 white women and 3,015 black women over the twenty-two-year period.

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[20]Women who are cohabitating are assigned to the non-female head of married choice. Female heads include only those living without a spouse or partner. Note that there is some inconsistency in identifying subfamilies in the PSID. It is not until a woman "splits off" and creates her own household that she may be identified as a subfamily head. For example, if a woman is living with her parents at the start of the sample, and she has her own child, she is not identified as a subfamily head. However, if she leaves her parent's household and then returns, she would be identified as a subfamily head from that point on. This could cause sample selection problems because we include only those women who leave their parents' household and then return.

The PSID data is augmented with state level data on welfare benefits, economic conditions, population characteristics, and political indicators. Two variables are used to describe the welfare benefits available in each state in each year. Benefits for AFDC participants are not limited to the cash transfers available under the program, but also include in-kind benefits through the food stamp and Medicaid programs. The benefit variable used in the analysis is equal to the combined cash value of benefits for a family of four from AFDC, food stamps, and Medicaid.[21] We also include a dummy variable equal to one if the state had an AFDC-UP program in the particular year. The states that offer UP benefits tend to be higher-benefit, higher-caseload states.[22] The state-level economic variables include the unemployment rate, average wage in manufacturing, per capita income, and statewide welfare participation rates. Demographic variables include the percentage of the population over age 65 and the percentage that are children. The political variables include the party of the governor, and the party composition of the state senate and house.[23]

Weighted statistics for the sample data are summarized for white women in Table 1 and for black women in Table 2. There are a total of 35,517 observations for whites and 24,423 observations for blacks. Over the sample period, 14 percent of white women in the sample were female heads compared to 51

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[21]The total cash value of the three programs is assigned to be 70 percent of the maximum AFDC benefit plus the food stamp maximum benefit plus 36.8 percent of the average Medicaid expenditure. The Medicaid benefit is calculated as the state's average Medicaid benefits for a family of four. The 70 percent results from AFDC income being "taxed" in calculating the food stamp benefit. Moffitt and Wolfe (1992) found the cash value of Medicaid to be 36.8 percent of expenditures. The AFDC data came from unpublished tables from the Family Support Administration, Department of Health and Human Services. The Medicaid data were generously provided by Robert Moffitt. All benefits are assigned based on a standard family size (four persons) because of the potential endogeneity of fertility decisions.

[22]Over the time period covered by the PSID, there was only minor variation in the number of states participating in the UP program. In 1968, 21 states offered AFDC-UP benefits. Through the mid-1970s, state participation increased, then decreased in the early 1980s. State participation has increased since the early 1980s. The Family Support Act of 1988 mandates that all states extend AFDC-UP benefits by 1990. See Hoynes (1993) for further description of the AFDC-UP program.

[23]These state data were generously provided by Anne Case.

percent of blacks. The PSID data show increasing trends in headship over the sample period where both whites and blacks saw a near doubling in the incidence of female headship over the period. Tables 1 and 2 show that female heads of household are more likely to have lower education levels, have smaller families, and live in an SMSA. Black women with children are more likely to have lower education levels and larger families than whites. Religion of the head, which is likely to be correlated with headship status, is provided in the PSID. The majority of black women are Baptist while white women are more likely to be Protestant or Catholic. Female heads of household, especially blacks, are more likely to live in areas with higher unemployment rates, higher wages, higher state income, and a greater Republican party presence in the state government.

Figure 1 presents average real benefit levels among our sample from the PSID of women with children. The AFDC guarantee has been declining in real terms over the entire period, although there has been a flattening of benefits since 1983. This real decline in benefits has been moderated by the growth in food stamps and Medicaid, as the combined cash value of the three programs increased somewhat until 1974 and has declined since. Although in general, increases in AFDC benefits have to be authorized by state legislatures, food stamp benefits are adjusted annually or semi-annually for changes in food prices. Using AFDC alone gives a deceptive picture of trends in the generosity of “welfare” because growth in one program can, to some extent, offset decline in another. In the empirical work that follows, the results are not sensitive to the definition of welfare benefits.

TABLE 1
Means of PSID Sample by Female Headship Status:
White Women

		Female Head		*Married*	
		Mean	Standard Deviation	Mean	Standard Deviation
Age		34.031	8.172	34.316	7.708
Education	<9 years	0.075		0.047	
	9–11 years	0.271		0.160	
	12 years	0.412		0.506	
	>12 years	0.242		0.287	
Number of Children		1.851	1.016	2.117	1.164
Age of Youngest	<3	0.188		0.290	
	3–5	0.200		0.201	
	>5	0.613		0.509	
Catholic		0.255		0.271	
Baptist		0.182		0.186	
Protestant		0.363		0.340	
Jewish		0.019		0.039	
Other Religion		0.086		0.106	
No Religion		0.114		0.096	
SMSA		0.633		0.600	
Welfare Benefits[a]		637.146	142.774	641.925	150.719
AFDC-UP		0.640		0.614	
Unemployment Rate		6.872	2.271	6.455	2.267
Average Wage		8.835	1.184	8.714	1.178
State Income per capita (1000)		11.504	1.752	11.221	1.839
State Pop Over 65 (%)		0.113	0.020	0.112	0.019
State Pop Kids (%)		0.213	0.028	0.219	0.030
State Pop Black (%)		0.124	0.068	0.120	0.071
Rep. Governor		0.471		0.474	
Rep. State House (%)		0.390	0.157	0.382	0.166
Rep. State Senate (%)		0.394	0.175	0.387	0.187
No. of Observations		3942		31,575	

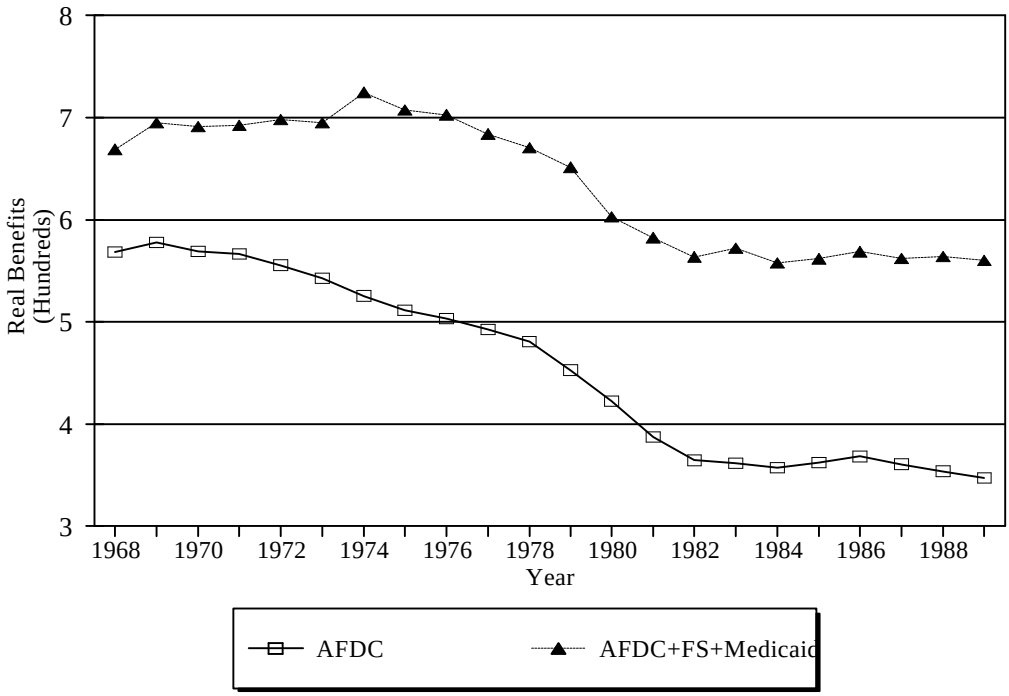
Source: Author's tabulation of PSID.
[a]Combined cash value of benefits from AFDC, food stamps, and Medicaid for a family of four.

TABLE 2
Means of PSID Sample by Female Headship Status:
Black Women

		Female Head		*Married*	
		Mean	Standard Deviation	Mean	Standard Deviation
Age		32.433	8.087	33.456	8.258
Education	<9 years	0.075		0.104	
	9–11 years	0.352		0.279	
	12 years	0.392		0.410	
	>12 years	0.181		0.207	
Number of Children		2.281	1.421	2.458	1.586
Age of Youngest	<3	0.298		0.323	
	3–5	0.225		0.234	
	>5	0.477		0.444	
Catholic		0.055		0.057	
Baptist		0.647		0.610	
Protestant		0.191		0.222	
Other Religion		0.022		0.030	
No Religion		0.085		0.081	
SMSA		0.780		0.701	
Welfare Benefits[a]		596.246	155.734	572.618	151.920
AFDC-UP		0.574		0.425	
Unemployment Rate		7.001	2.331	6.423	2.301
Average Wage		8.610	1.365	8.198	1.418
Income per Capita (1000)		11.397	1.977	10.60314	2.073
Percent Aged		0.111	0.018	0.107	0.019
Percent Kids		0.212	0.028	0.224	0.031
Percent Black		0.187	0.113	0.199	0.110
Republican Governor		0.466		0.415	
Percent House Rep.		0.331	0.167	0.277	0.184
Percent Senate Rep.		0.334	0.192	0.274	0.203
No. of Observations		10,542		13,881	

Source: Author's tabulations of PSID.
[a]Combined cash value of benefits from AFDC, food stamps, and Medicaid for a family of four.

Figure 1
Trends in Real AFDC Guarentee and Total Welfare Benefits, 1969-1989
(all races)



Source: Author's tabulations of 1968-1989 PSID.

Comparing the trend in benefits to the trend in female headship in Figure 2, it appears that benefits tracked female headship quite closely until the mid-1970s. Since then, real benefits have declined while the headship rate has increased. This point has been made in the time-series literature. However, other factors may have changed since the mid-1970s which may still leave a role for welfare.

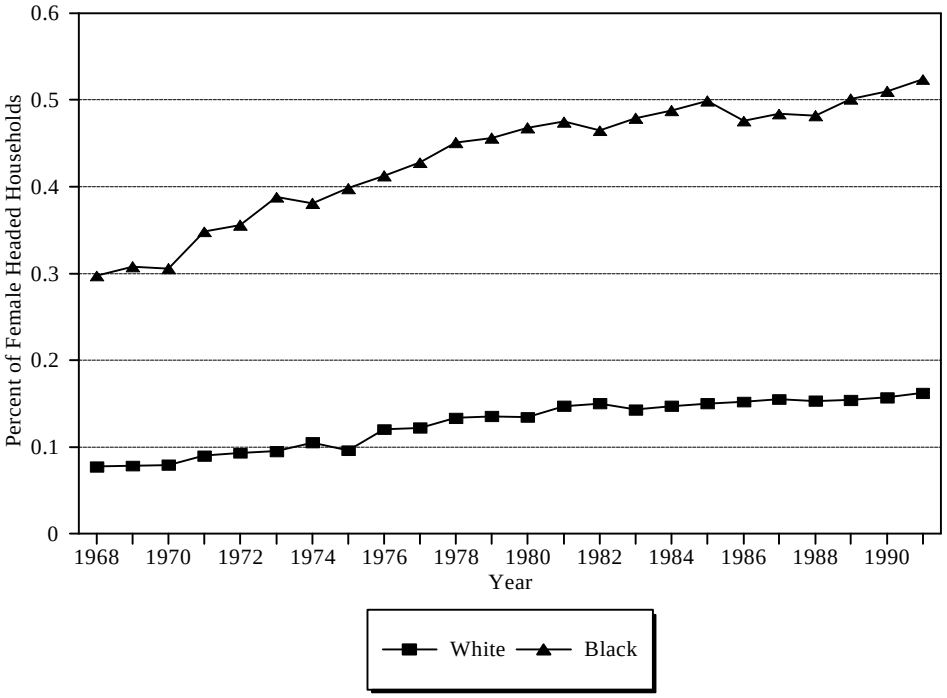
In the state fixed-effects model, the welfare effect is identified by within-state variation in benefits over time. Figures 3 and 4 illustrate that there are significant differences in the trends across the states. Figure 3 shows real AFDC benefits for four moderate- to high-benefit states with large welfare caseloads. Illinois was a very high-benefit state in 1968 (4th-highest ranked state) and is now one of the lowest benefit states outside of the south (ranked 22nd overall). California was an average state in 1968 (ranked 23rd) but had risen to become one of highest benefit states by the end of the period.[24] Figure 4 shows the trends for three low-benefit states. While Mississippi has consistently been one of the lowest benefit states over the entire period, Texas has fallen from modest benefits (ranked 12th in 1968) to one of the lowest benefit states in the country (ranked 3rd from the bottom, above Alabama and Mississippi).

5. RESULTS

This section presents estimates for the female headship model described in section 3. The sample consists of all married women or female heads of household who are between the ages of 16 and 50 and who have children. The dependent variable is equal to one if the woman is a female head, and equal to zero otherwise. Because headship patterns differ quite substantially for blacks and whites (Ellwood and Crane 1990; Danziger et al. 1982; Hoffman, Duncan, and Mincy 1991; Moffitt 1990a, 1994), separate equations are estimated for white and black women. To account for non-random sample composition, all regressions are

[24]During much of this period, California was the only major state where AFDC benefits were automatically adjusted for changes in the cost of living. Typically, benefits are nominally set by state legislatures and benefits remain fixed in nominal terms for periods of several years.

Figure 2
Female Headed Households as a Percent of All Families with Children, 1968–1990
(by race)



Source: U.S. Bureau of the Census, Household and Family Characteristics, various issues.

Figure 3
Trends in AFDC Benefits for Selected High Benefit States

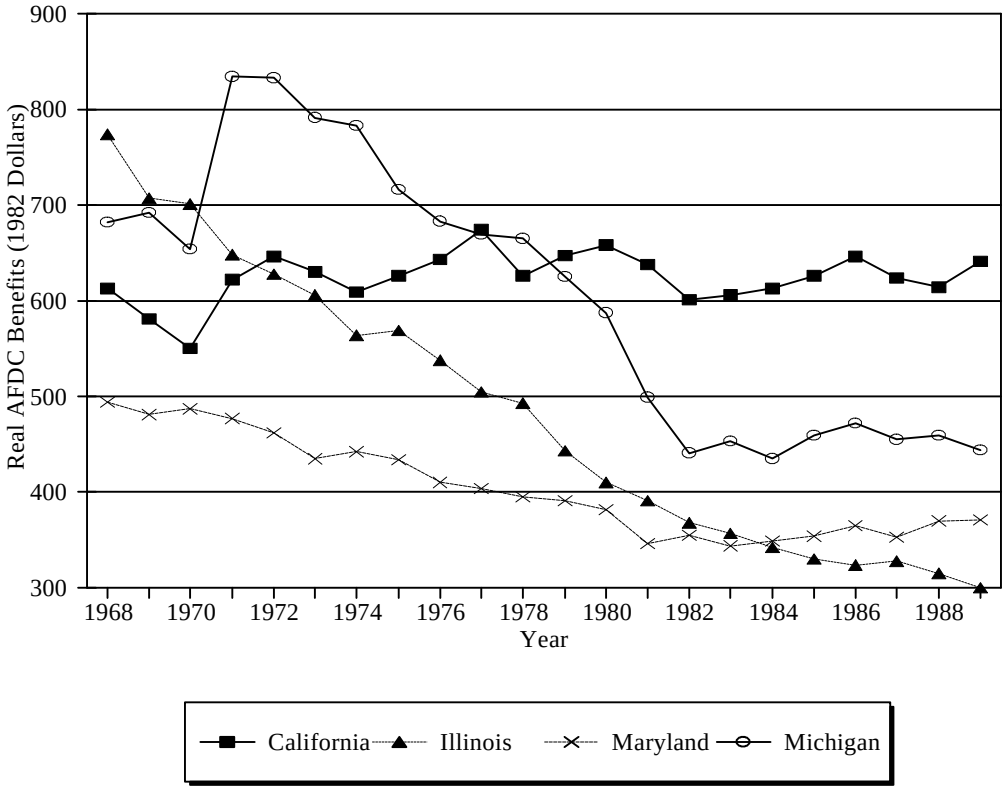
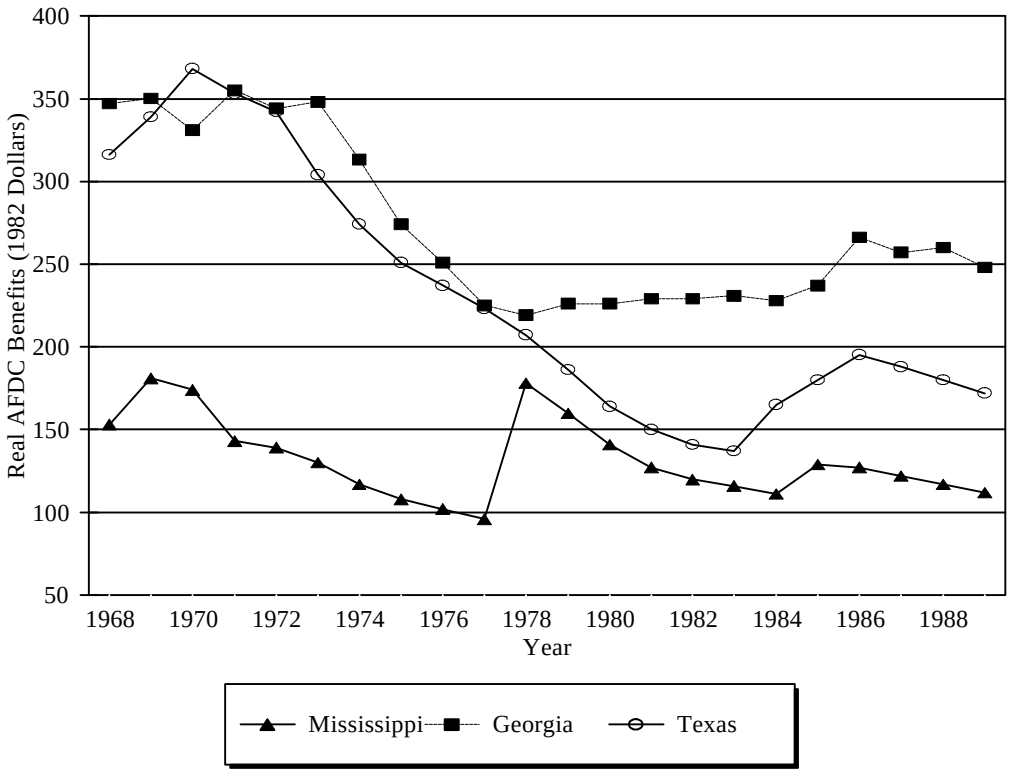


Figure 4
Trends in AFDC Benefits for Selected Low Benefit States



estimated using the sample weights. Standard errors are adjusted for arbitrary correlation over time using the correction of Huber (1967). The linear probability model is estimated accounting for heteroscedasticity due to the use of a discrete dependent variable in a linear model (Maddala 1983).

Estimates for White Women

Parameter estimates for the headship equation for white women based on the linear probability model are provided in Table 3. Model (1) provides estimates for the basic model which includes welfare benefit variables, characteristics of the woman, labor market variables, division dummies, and time effects. Consistent with recent evidence, welfare benefits have a positive and significant, but modest, effect on female headship for white women. If AFDC benefits were increased by $100, female headship would increase by 0.6 percentage points, an increase of about 5 percent. Contrary to expectations, living in a state that offers AFDC-UP benefits is estimated to have a positive, although insignificant, effect on female headship.[25] The other covariates included in the model show that female headship is higher for younger women who have lower education levels and older children, and who live in urban areas. Female headship also varies by religious affiliation: relative to the omitted group of Catholics, Jewish women have lower propensities to be a female head of household while those women with no stated religion have higher propensities. The effects of education and living in an urban area have particularly large effects. White women with less than a high school education are more than twice as likely to be female heads than high school graduates. Living in an SMSA increases the female headship probability by 25 percent.[26] Unemployment rates and average wages are not important determinants of female headship outcomes. Time effects are included to control for changes in

[25]In UP states, benefits are potentially available both inside and outside of marriage. Consequently, it is possible that the effect of benefits on family structure will differ in states offering AFDC-UP benefits versus non-UP states. In results not shown, interacting the AFDC-UP dummy with the benefit variable results in the expected negative coefficient on the AFDC-UP dummy. This was also found by Winkler (1993).

[26]In general, one should take care in interpreting these effects as causal. Female heads may prefer to live in SMSAs because of availability of services, jobs, or other factors.

TABLE 3
Parameter Estimates for Female Headship Model Linear Probability Model: White Women

	Full Sample		*State Subsample*				*Individual Effects*		*State and Individual Effects*	
	(1)		(2)		(3)		(4)		(5)		(6)	
Welfare Benefit	0.006	(0.003)	0.017	(0.008)	0.013	(0.010)	0.002	(0.006)	-0.002	(0.003)	-0.002	(0.003)
AFDC-UP	0.007	(0.009)	-0.006	(0.010)	-0.002	(0.012)	-0.009	(0.013)	-0.016	(0.006)	-0.022	(0.007)
Age	-0.001	(0.001)	-0.002	(0.001)	-0.001	(0.001)	-0.002	(0.001)	0.002	(0.003)	0.002	(0.003)
Education 9–11	-0.031	(0.012)	-0.070	(0.026)	-0.043	(0.022)	-0.047	(0.023)				
Education 12	-0.114	(0.012)	-0.153	(0.015)	-0.147	(0.023)	-0.145	(0.023)				
Education >12	-0.115	(0.012)	-0.119	(0.030)	-0.151	(0.026)	-0.154	(0.023)				
Age Youngest 3–5	0.032	(0.011)	0.050	(0.018)	0.073	(0.020)	0.050	(0.007)	0.033	(0.004)	0.032	(0.004)
Age Youngest >5	0.068	(0.012)	0.058	(0.018)	0.067	(0.013)	0.089	(0.008)	0.050	(0.005)	0.049	(0.005)
Number of Children	-0.015	(0.003)	-0.013	(0.006)	-0.020	(0.004)	-0.022	(0.002)	-0.009	(0.002)	-0.008	(0.002)
SMSA	0.034	(0.007)	0.045	(0.012)	0.016	(0.012)	0.020	(0.008)	0.015	(0.006)	0.022	(0.006)
Baptist	0.004	(0.007)	0.084	(0.048)	0.022	(0.014)	-0.005	(0.011)				
Jewish	-0.043	(0.008)	-0.055	(0.027)	-0.047	(0.019)	-0.047	(0.011)				
Protestant	0.027	(0.010)	0.029	(0.012)	0.022	(0.017)	0.003	(0.008)				
Other Religion	0.036	(0.017)	0.056	(0.037)	-0.024	(0.020)	-0.010	(0.015)				
No Religion	0.014	(0.007)	0.045	(0.017)	0.027	(0.011)	0.010	(0.008)				
Unemployment Rate	0.001	(0.002)	0.017	(0.007)	0.001	(0.004)	0.001	(0.003)	0.000	(0.001)	-0.001	(0.001)
Average Wage	-0.001	(0.007)	0.001	(0.004)	-0.008	(0.010)	0.013	(0.008)	0.003	(0.003)	0.002	(0.004)
Intercept	0.087	(0.071)	0.066	(0.096)	0.143	(0.108)						
Year Dummies	yes		yes		yes		yes		yes		yes	
Division Dummies	yes		no		yes		no		no		no	
State Dummies	no		no		no		yes		no		yes	
Indi. Fixed Effects	no		no		no		no		yes		yes	
No. of Observations	35,517		27,532		27,532		27,532		27,532		27,532	

Standard errors are in parentheses.

social norms and show a consistent upward trend. These time effects are jointly significant at the 1 percent level.

The remaining models in Table 3 examine the role of state and individual effects. Due to small sample sizes in some states, these results are estimated on a subset of the full sample, including 21 states, for a total of 27,532 observations.[27] (The characteristics of the state subsample are presented in appendix Table B1.) Models (2) and (3) present specifications with and without division dummies. The welfare effect in this subsample is somewhat higher but the marginal effects for most other covariates are similar. Adding the fixed effects for the states, as presented in (4), substantially changes the estimated welfare effect. These results imply that the unmeasured state effects are quite influential, as the estimated welfare effect changes from being positive and significant to being close to zero and insignificant. These state effects are jointly significant at the 1 percent level. To explore what causes this reversal, Figure 5 plots the estimated state fixed effects against average welfare benefits for each of the states in the sample. The decline in the estimated welfare effect is a result of the state effects being *positively* correlated with state welfare benefits for female heads of household. For example, high-benefit states such as California, Minnesota, and New York have high benefits and relatively large state effects. The correlation coefficient for these series is 0.36. These results are consistent with the idea that unmeasured state effects influence white headship decisions and welfare benefits. For example, a state may have a strong two-family tradition that results in fewer female-headed households and less support for the AFDC program. Not taking into account state effects attributes this difference in preferences to a welfare incentive.

In order to confirm the robustness of these results to the functional form assumption, a logit model was also estimated. These estimates, presented in appendix Table A1, confirm that adding state effects

[27]A state was included in the state sample if there were observations for at least 75 women over the course of the panel. These states were not selected based on the composition of female heads versus married women. These states account for about 75 percent of total welfare caseload or about 70 percent of all white families with children.

Figure 5 here. Figure 5 and 6 are not available in an electronic format. If you want to obtain a copy of figures 5 and 6 from Discussion Paper 1078-95 please contact IRP publications. The address is:

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reduces both the magnitude and statistical significance of the welfare effect. The last specification in Table A1 adds discrete individual random effects to account for a common disturbance in the panel (Heckman and Singer 1984). These results imply that, in the absence of state effects, increasing benefits by $100 leads to a 7 percent increase in the probability of being a female head of household.

The remainder of the table provides strong evidence that for whites, state effects are capturing differences in the composition of the population across the states. Adding individual fixed effects, as shown in (5), has virtually the same impact on the estimated welfare effect as adding state fixed effects—the coefficient on AFDC benefits becomes small (actually turns negative) and insignificant. Once individual effects are included, adding state effects does not change the parameter of interest. The state effects are still important (for example, they are still jointly significant at the 1 percent level) but they do not influence the estimated welfare effect. This result is good news for applications when only pooled cross-sectional information is available, in that controlling for state effects is sufficient to account for population heterogeneity across states.

It is worth considering more formally why we might expect state and individual effects to have a differential impact on the estimated welfare effect. Suppose that no families moved over the course of the PSID panel. Then controls for state of residence, through state fixed effects, would have the same influence on the welfare effect as the individual effects. This is because welfare benefits vary only by state and, in the event that no households move across states, all that we have to identify the state effects is the individual effects of its residents. In that case, we would expect specifications (4) and (5) to have the same coefficient on welfare benefits. In other words, the correlation between welfare benefits and state effects would be equal to the correlation between benefits and individual effects. We do, however, observe families moving between states in the PSID data. Among the sample of female heads of household, about 9 percent of blacks and 16 percent of whites move at some time over the two decades covered by the PSID. This migration implies that the composition of the population within a state is not fixed, and therefore, individual effects and state effects can have different impacts on the estimated welfare effect.

Table 4 explores the sensitivity of the estimated welfare effect to omitting determinants of state AFDC benefits. The upper panel of the table adds state economic and political variables to model (2) in Table 3 with no controls for state effects. The lower panel of the table reestimates these models with state effects. Each specification in Table 4 also includes all individual and family controls used in Table 3 but they are omitted for brevity.[28] These estimates imply that higher rates of female headship are found in states with proportionally fewer children, fewer elderly, and more AFDC cases per capita, and states with higher unemployment rates and average wages. The political variables (dummy for Republican governor and proportion of state houses held by Republicans) do not appear to be important. Despite their ability to explain variation in female headship patterns, these results do not provide strong evidence for the endogeneity of welfare benefits. Specification (2) in Table 4 shows that adding controls for economic variables (including AFDC caseload per capita) reduces the size of the welfare effect. This is primarily due to the inclusion of the labor market controls (unemployment rate and average wage) that were included in the earlier specifications in Table 3. Adding demographic and political variables as additional policy determination variables has no impact on the estimated welfare effect.[29]

Estimates for Black Women

Results for the linear probability model are presented in Table 5. The estimates for the full sample with division dummies, Model (1), show that the determinants of female headship for blacks differ substantially from the estimates reported for whites. The benefit effect is significantly larger among blacks than it is for whites. For blacks, a $100 increase in welfare benefits increases the headship probability by

[28]The first specification in Table 4 drops the labor market controls that have been included in all specifications in Table 3.

[29]As noted by Besley and Case (1994), even if the omission of these state level determinants of AFDC benefits do not bias the estimated welfare effect, correlation between the unobservable elements could still lead to a bias. This is unlikely due to the lack of evidence based on observable influences.

AFDC caseload per capita is potentially endogenous. If it is dropped from the regression the results do not change substantially.

TABLE 4
Parameter Estimates for Female Headship Model Adding State Controls: White Women

	No State Fixed Effects (Model (2) in Table 3)							
	(1)		(2)		(3)		(4)	
Welfare Benefit	0.011	(0.003)	0.007	(0.005)	0.006	(0.006)	0.005	(0.006)
AFDC-UP	0.011	(0.016)	-0.013	(0.009)	-0.013	(0.018)	-0.014	(0.037)
Unemployment Rate			0.007	(0.002)	0.007	(0.004)	0.007	(0.006)
Average Wage			0.007	(0.003)	0.014	(0.008)	0.012	(0.015)
STINC/POP (1000)			0.001	(0.003)	-0.008	(0.006)	-0.008	(0.007)
AFDC Cases/POP			2.277	(1.552)	1.670	(2.126)	1.985	(1.314)
AGED/POP					-0.695	(0.550)	-0.719	(0.427)
KIDS/POP					-1.933	(0.608)	-1.908	(0.827)
Rep. Governor							0.000	(0.014)
Rep. Senate (%)							-0.007	(0.125)
Rep. House (%)							0.037	(0.095)
Year Dummies	yes		yes		yes		yes	
No. of Observations	27,532		27,532		27,532		27,532	

	State Fixed Effects (Model (4) in Table 3)							
	(1)		(2)		(3)		(4)	
Welfare Benefit	0.001	(0.006)	0.004	(0.006)	0.004	(0.005)	0.003	(0.008)
AFDC-UP	-0.016	(0.010)	-0.016	(0.014)	-0.017	(0.009)	-0.022	(0.016)
Unemployment Rate			0.005	(0.003)	0.007	(0.003)	0.006	(0.008)
Average Wage			0.008	(0.010)	0.008	(0.012)	0.007	(0.013)
STINC/POP (1000)			0.003	(0.010)	-0.003	(0.007)	-0.003	(0.013)
AFDC Cases/POP			3.377	(1.412)	2.611	(1.579)	3.205	(2.976)
AGED/POP					0.376	(1.185)	0.569	(1.319)
KIDS/POP					-2.169	(1.571)	-2.100	(0.589)
Rep. Governor							0.009	(0.013)
Rep. Senate (%)							0.024	(0.103)
Rep. House (%)							0.004	(0.192)
Year Dummies	yes		yes		yes		yes	
No. of Observations	27,532		27,532		27,532		27,532	

Standard errors are in parentheses.

TABLE 5
Parameter Estimates for Female Headship Model Linear Probability Model: Black Women

	Full Sample		*State Sample*				*Individual Effects*		*State and Individual Effects*	
	(1)		(2)		(3)		(4)		(5)		(6)	
Welfare Benefit	0.023	(0.008)	0.032	(0.006)	0.003	(0.009)	0.028	(0.011)	0.002	(0.004)	-0.003	(0.004)
AFDC-UP	0.034	(0.018)	0.037	(0.018)	0.027	(0.019)	0.073	(0.030)	-0.012	(0.009)	-0.011	(0.010)
Age	-0.005	(0.001)	-0.005	(0.001)	-0.004	(0.001)	-0.004	(0.001)	0.003	(0.003)	0.003	(0.003)
Education 9–11	0.002	(0.019)	0.018	(0.019)	0.021	(0.020)	-0.004	(0.018)				
Education 12	-0.106	(0.019)	-0.092	(0.019)	-0.077	(0.023)	-0.102	(0.019)				
Education >12	-0.170	(0.022)	-0.162	(0.021)	-0.160	(0.023)	-0.175	(0.021)				
Age Youngest 3–5	0.017	(0.014)	0.006	(0.014)	0.019	(0.018)	0.007	(0.014)	0.010	(0.004)	0.008	(0.004)
Age Youngest >5	0.075	(0.014)	0.074	(0.014)	0.075	(0.014)	0.067	(0.015)	0.017	(0.005)	0.017	(0.005)
Number of Children	-0.003	(0.004)	-0.003	(0.004)	-0.004	(0.004)	-0.005	(0.003)	-0.003	(0.002)	-0.005	(0.002)
SMSA	0.034	(0.014)	0.043	(0.014)	0.045	(0.016)	-0.005	(0.015)	-0.015	(0.009)	0.004	(0.010)
Baptist	0.012	(0.004)	0.015	(0.004)	0.015	(0.004)	0.018	(0.005)				
Protestant	0.012	(0.007)	0.023	(0.006)	0.022	(0.008)	0.016	(0.011)				
Other Religion	0.047	(0.023)	0.047	(0.024)	0.044	(0.027)	0.037	(0.024)				
No Religion	0.001	(0.026)	-0.011	(0.026)	-0.015	(0.028)	-0.027	(0.026)				
Unemployment Rate	-0.052	(0.047)	-0.094	(0.043)	0.016	(0.105)	-0.117	(0.037)	0.001	(0.002)	0.004	(0.002)
Average Wage	-0.023	(0.030)	-0.024	(0.031)	-0.036	(0.033)	-0.032	(0.030)	-0.003	(0.004)	0.003	(0.004)
Intercept	-0.041	(0.086)	0.026	(0.061)	0.281	(0.085)						
Year Dummies	yes		yes		yes		yes		yes		yes	
Division Dummies	yes		no		yes		no		no		no	
State Dummies	no		no		no		yes		no		yes	
Indi. Fixed Effects	no		no		no		no		yes		yes	
No. of Observations	24,423		23,749		23,749		23,749		23,749		23,749	

Standard errors are in parentheses.

over two percentage points, or 7 percent. The larger welfare effect for blacks may be a result of blacks having a greater likelihood of taking up benefits as female heads. Previous studies have found greater welfare benefits for blacks (Ellwood and Bane 1985; Moffitt 1990a; Hoffman, Duncan, and Mincy 1991; Moffitt 1994) as well as greater welfare effects among lower-education groups within racial groups (Moffitt 1990a, 1994; Winkler 1993). The effect of other covariates is similar to that found for whites.

The state subsample for blacks contains 23,749 observations in 21 states.[30] Model (2) shows that the results for the state subsample do not differ substantially compared to estimates for the entire sample. The remaining models add state and individual effects.[31] In sharp contrast to the estimates for whites, controlling for state effects, as shown in Model (4), has almost no effect on welfare benefit estimates. The coefficient on AFDC benefits is 0.032 compared to 0.028 without any state effects. Figure 6 shows the lack of correlation between the estimated state fixed effects and average welfare benefits by state. The correlation coefficient is -0.07. This weak negative correlation is due to a few low-benefit states (Georgia, Florida) that have relatively large state effects.[32]

As suggested earlier, it is possible that the state effects are capturing other characteristics of the state welfare program not being captured by the welfare benefit. However, this would imply similar values for the state effects in the regressions on blacks and whites, which is not found. Among the 15 states common to the black and white state subsamples, the correlation between the state effects is weakly positive but insignificant

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[30]The state subsample for blacks contains all states with at least 50 women at some point during the panel. These states account for about 88 percent of all black families with children. The means of this subsample are presented in appendix Table B2.

[31]Because of the unequal distribution of the black population, some census divisions are poorly represented in the black state subsample. This affects the interpretation of the estimated division dummies in model (3). Accordingly, model (2) without division dummies is the base model for the state sample.

[32]As a specification check, these models were also estimated using a logit model with random effects. The results of the mixed logit model, presented in appendix Table A2, match the linear model results quite closely.

Figure 6 here. Figure 6 is not available in an electronic format. You can obtain a copy of Discussion Paper 1078-95 that contains figure 6 by contacting IRP publications. The address is:

Institute for Research on Poverty
1180 Observatory Drive
3412 Social Science Drive
University of Wisconsin
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.

The remaining specifications in Table 5 show that unobserved individual effects are correlated with the state benefit level. Adding individual effects (Model 5) reduces the magnitude of the welfare effect from a positive and significant 0.028 to a statistically insignificant 0.001. By omitting a control for unobserved individual characteristics, we overestimate the role of welfare in the propensity to be a female head of household. Similarly to whites, adding state effects to this model has no impact on estimated welfare effects.

There are two important points to draw from the results for blacks. First, omitting individual effects can lead—erroneously—to the conclusion that AFDC benefits matter for female headship decisions. The composition of black women across the states (with respect to their propensity to choose female headship) is correlated with the state welfare benefit. This can be explained by migration to states with higher welfare benefits. Second, state effects for blacks are not correlated with welfare benefits. This is consistent with a situation in which black women are influenced by some social, cultural, or religious norms at the state level (the state effects are significant) but these community norms do not affect the policy process leading to higher welfare benefits. This may be because of lack of political power in this group.

The importance of individual fixed effects can be explained by differential migration among blacks. About 9 percent of black families in the sample moved at some time during the twenty-two years in the PSID sample. Several facts provide evidence of differential migration. On average, families that move are moving to higher-benefit states. Those who moved found their benefits to be 1.5 percent higher than they would have been if they had stayed. Further, those with a higher propensity to be female head of household (a higher value for α_i) experience a larger increase in real benefits relative to those with a lower propensity to be a female head of household. These results imply that the positive relationship between welfare benefits and female headship that has been found in previous studies is a result of a composition

effect achieved through welfare-induced migration over time. There is no evidence of a causal relationship between welfare benefits and female headship.

This represents a very indirect way of getting at the importance of welfare benefits in migration decisions. There is, however, a sizable literature that examines this issue and shows a modest and statistically significant effect of welfare on migration decisions (for example, see recent reviews in Moffitt 1992 and Walker 1994). The main exception is Walker (1994), who finds no evidence of migration to three high-benefit states from the (locally) low-benefit states with which they share borders.

Table 6 explores the robustness of these conclusions to including economic and political determinants of AFDC benefits. Again, the top panel of the table considers adding these state variables to the model without state effects while the bottom panel adds the state variables to the model with state effects. Similar to the results for whites, there is weak evidence of endogeneity of welfare benefits in that including the economic variables in specification (2) reduces the estimated welfare effect. Higher rates of female headship are found in states with higher unemployment rates, higher wages, and higher income. States with Republican governors with more Republicans in the state senate have lower rates of female headship. With state effects, however, adding the state variables has a much smaller effect.

6. CONCLUSION

This paper examines what impact unmeasured state, individual effects, and variables measuring the determinants of AFDC benefits have on estimates of the effect of welfare benefits on female headship decisions. Using over twenty years of data from the PSID, we specify a model of female headship that not only includes controls for characteristics of the woman, state characteristics, year effects, and welfare variables, but also controls for state of residence and individual effects. The results show that welfare benefits are positively correlated with both individual and state effects for white women. Models excluding both measures result in a positive and significant welfare effect while adding individual or state fixed effects leads

TABLE 6
Parameter Estimates for Female Headship Model Adding State Controls: Black Women

	No State Fixed Effects (Model (2) in Table 5)							
	(1)		(2)		(3)		(4)	
Welfare Benefit	0.044	(0.006)	0.027	(0.008)	0.028	(0.008)	0.020	(0.008)
AFDC-UP	0.051	(0.017)	0.028	(0.020)	0.025	(0.020)	0.038	(0.021)
Unemployment Rate			0.022	(0.005)	0.021	(0.005)	0.026	(0.005)
Average Wage			0.017	(0.006)	0.018	(0.006)	-0.004	(0.007)
STINC/POP (1000)			0.013	(0.007)	0.013	(0.007)	0.029	(0.009)
AFDC Cases/POP			-0.063	(1.340)	0.210	(1.188)	-1.725	(1.746)
AGED/POP					0.446	(0.390)	0.613	(0.451)
KIDS/POP					0.231	(0.492)	2.838	(0.877)
Rep. Governor							-0.024	(0.014)
Rep. Senate (%)							-0.006	(0.111)
Rep. House (%)							0.266	(0.119)
Year Dummies	yes		yes		yes		yes	
No. of Observations	23,749		23,749		23,749		23,749	

	State Fixed Effects (Model (4) in Table 5)							
	(1)		(2)		(3)		(4)	
Welfare Benefit	0.038	(0.012)	0.033	(0.011)	0.030	(0.013)	0.028	(0.010)
AFDC-UP	0.062	(0.036)	0.081	(0.032)	0.087	(0.034)	0.085	(0.032)
Unemployment Rate			0.020	(0.006)	0.018	(0.008)	0.017	(0.004)
Average Wage			0.008	(0.011)	0.005	(0.012)	0.003	(0.011)
STINC/POP (1000)			0.001	(0.001)	0.000	(0.002)	-0.001	(0.001)
AFDC Cases/POP			-3.084	(2.417)	-3.287	(2.597)	-6.874	(2.174)
AGED/POP					-2.613	(1.450)	-2.188	(1.177)
KIDS/POP					-1.010	(1.513)	-0.695	(0.770)
Rep. Governor							-0.012	(0.013)
Rep. Senate (%)							-0.430	(0.141)
Rep. House (%)							0.360	(0.139)
Year Dummies	yes		yes		yes		yes	
No. of Observations	23,749		23,749		23,749		23,749	

Standard errors are in parentheses.

to a negative (or zero) and insignificant welfare effect. That is, including individual effects has the same impact as controlling for state effects. This gives a natural interpretation to the state effects as capturing the composition of the state residents. This is good news for those applications where no panel data are available, but pooled cross sections are. Among blacks, however, the results are quite different. There is virtually no correlation between state effects and welfare benefits and omitting state effects has no impact on the estimated welfare effect. However, omitting the *individual* effects does generate a substantial bias. Once we control for individual effects, the estimated welfare effect is small and statistically insignificant. This can be explained by higher propensities for welfare-induced migration by women with greater likelihood of becoming female heads of household, independent of the welfare system. This suggests that a study examining the determinants of interstate migration patterns of black women would be useful.

These results have important implications for the literature on welfare and female headship. This study clearly shows that there is no evidence that AFDC benefits play any role in female headship decisions. More generally, the study also underscores the importance of close examination of results that rely on interstate variation when the regression may contain unmeasured state effects.

Appendix A

Likelihood Function for Mixed Logit Model

Assume that the individual effect α_i in (5) is drawn from a discrete distribution with *K* points of support. The points of support are given by v_k with probability π_k. Further, if the distribution of the error ϵ_{its} is logistic, then the probability that a woman is a female head of household given covariates Z_{it} and discrete random effect v_k is given by $F(Z_{it}B+v_k)$ where $F(x)=1/(1+exp(x))$. The likelihood for individual *i*, then, is given by

$$L_i = \sum_{k=1}^{K} \pi_k \prod_{t=1}^{T} F(Z_{it}\beta + v_k)^{\delta_{it}} [\, 1 - F(Z_{it}\beta + v_k)\,]^{1-\delta_{it}} \qquad \text{(A.1)}$$

where δ_{it} is equal to 1 if individual *i* in year *t* is a female head of household, and zero otherwise.

TABLE A1
Parameter Estimates for Female Headship Model
Mixed Logit Model: White Women

	(1)		(2)		(3)		(4)	
Welfare Benefit	0.098	(0.018)	0.060	(0.021)	0.012	(0.032)	0.010	(0.040)
AFDC-UP	-0.002	(0.048)	0.036	(0.056)	-0.045	(0.089)	-0.095	(0.137)
Age	-0.036	(0.002)	-0.036	(0.003)	-0.034	(0.003)	-0.037	(0.003)
Education 9–11	-0.314	(0.074)	-0.308	(0.076)	-0.273	(0.076)	-0.277	(0.072)
Education 12	-1.213	(0.071)	-1.197	(0.073)	-1.142	(0.074)	-1.225	(0.071)
Education >12	-1.236	(0.075)	-1.206	(0.077)	-1.150	(0.078)	-1.271	(0.077)
Age Youngest 3–5	0.598	(0.051)	0.598	(0.051)	0.592	(0.051)	-0.631	(0.106)
Age Youngest >5	0.925	(0.049)	0.920	(0.049)	0.907	(0.050)	0.971	(0.073)
Number of Children	-0.245	(0.016)	-0.242	(0.016)	-0.245	(0.016)	-0.254	(0.019)
SMSA	0.231	(0.034)	0.220	(0.034)	0.161	(0.035)	0.187	(0.039)
Baptist	0.201	(0.053)	0.182	(0.054)	0.161	(0.056)	0.056	(0.022)
Jewish	-0.592	(0.104)	-0.617	(0.105)	-0.545	(0.107)	0.094	(0.089)
Protestant	0.212	(0.041)	0.199	(0.042)	0.161	(0.043)	0.188	(0.056)
Other Religion	0.125	(0.072)	0.097	(0.074)	0.071	(0.075)	-0.637	(0.117)
No Religion	0.332	(0.055)	0.299	(0.056)	0.272	(0.057)	0.150	(0.043)
Unemployment Rate	0.078	(0.013)	0.050	(0.014)	0.060	(0.015)	0.068	(0.080)
Average Wage	0.044	(0.018)	0.088	(0.031)	0.100	(0.054)	0.291	(0.055)
Intercept	-1.859	(0.210)	-2.153	(0.313)				
Year Dummies	yes		yes		yes		yes	
Division Dummies	no		yes		no		no	
State Dummies	no		no		yes		yes	
Random Ind. Effects	no		no		no		yes	
Log Likelihood	-10293		-10270		-10177		-10084	
No. of Observations	27,532		27,532		27,532		27,532	

Standard errors are in parentheses.

TABLE A2
Parameter Estimates for Female Headship Model Mixed Logit Model: Black Women

	(1)		(2)		(3)		(4)	
Welfare Benefit	0.157	(0.008)	0.048	(0.014)	0.158	(0.025)	0.087	(0.044)
AFDC-UP	0.138	(0.022)	0.088	(0.034)	0.303	(0.138)	0.434	(0.201)
Age	-0.021	(0.001)	-0.022	(0.002)	-0.024	(0.002)	-0.007	(0.004)
Education 9–11	0.093	(0.035)	0.095	(0.042)	0.016	(0.044)	0.024	(0.085)
Education 12	-0.402	(0.035)	-0.395	(0.042)	-0.481	(0.044)	-0.514	(0.087)
Education >12	-0.718	(0.037)	-0.734	(0.044)	-0.843	(0.047)	-0.840	(0.095)
Age Youngest 3–5	0.018	(0.022)	0.021	(0.072)	0.020	(0.075)	0.118	(0.108)
Age Youngest >5	0.339	(0.021)	0.358	(0.042)	0.387	(0.044)	0.454	(0.071)
Number of Children	-0.033	(0.006)	-0.034	(0.008)	-0.035	(0.009)	-0.072	(0.018)
SMSA	0.168	(0.021)	0.162	(0.025)	-0.037	(0.030)	-0.089	(0.057)
Unemployment Rate	0.148	(0.035)	0.085	(0.009)	0.070	(0.014)	0.087	(0.023)
Average Wage	-0.110	(0.038)	0.074	(0.016)	0.060	(0.067)	0.060	(0.090)
Baptist	-0.502	(0.054)	0.075	(0.041)	0.075	(0.043)	0.009	(0.092)
Protestant	-0.153	(0.041)	-0.203	(0.043)	-0.239	(0.046)	-0.189	(0.101)
Other Religion	0.075	(0.005)	-0.633	(0.075)	-0.668	(0.085)	-0.408	(0.195)
No Religion	0.099	(0.009)	-0.286	(0.052)	-0.242	(0.054)	-0.489	(0.109)
Intercept	-2.076	(0.098)	-0.782	(0.357)				
Year Dummies	yes		yes		yes		yes	
Division Dummies	no		yes		no		no	
State Dummies	no		no		yes		yes	
Random Indi. Effects	no		no		no		yes	
Log Likelihood	-15,662		-15,459		-15,091		-13,114	
No. of Observations	23,749		23,749		23,749		23,749	

Standard errors are in parentheses.

Appendix B

TABLE B1
Means of State Sample by Female Headship Status:
White Women

		Female Head		*Married*	
		Mean	Standard Deviation	Mean	Standard Deviation
Age		33.812	8.198	34.478	8.198
Education<9 years		0.078		0.044	
	9–11 years	0.294		0.157	
	12 years	0.411		0.520	
	>12 years	0.216		0.279	
Number of Children		1.845	1.019	2.122	1.164
Age of Youngest	<3	0.190		0.283	
	3–5	0.203		0.199	
	>5	0.608		0.518	
Catholic		0.255		0.292	
Baptist		0.168		0.164	
Protestant		0.376		0.343	
Jewish		0.019		0.044	
Other Religion		0.073		0.105	
No Religion		0.128		0.096	
SMSA		0.628		0.617	
Welfare Benefits[a]		653.606	143.009	658.387	153.186
AFDC-UP		0.690		0.664	
Unemployment Rate		7.021	2.281	6.562	2.237
Average Wage		8.966	1.234	8.833	1.220
State Income per Capita (1000)		11.709	1.684	11.424	1.736
AFDC Case per Capita		0.016	0.027	0.015	0.023
State Pop over 65 (%)		0.114	0.020	0.113	0.020
State Pop Kids (%)		0.211	0.028	0.218	0.029
State Pop Black (%)		0.124	0.055	0.122	0.058
Rep. Governor		0.541		0.533	
Rep. State House (%)		0.397	0.129	0.385	0.149
Rep. State Senate (%)		0.402	0.158	0.393	0.175
No. of Observations		3100		24,432	

[a]Combined cash value of benefits from AFDC, food stamps, and Medicaid for a family of four.

TABLE B2
Means of State Sample by Female Headship Status:
Black Women

		Female Head		*Married*	
		Mean	Standard Deviation	Mean	Standard Deviation
Age		32.446	8.070	33.318	8.216
Education	<9 years	0.075		0.105	
	9–11 years	0.361		0.285	
	12 years	0.387		0.401	
	>12 years	0.177		0.210	
Number of Children		2.286	1.432	2.487	1.597
Age of Youngest	<3	0.301		0.326	
	3–5	0.220		0.240	
	>5	0.478		0.434	
Catholic		0.057		0.057	
Baptist		0.655		0.611	
Protestant		0.183		0.219	
Other Religion		0.020		0.030	
No Religion		0.085		0.083	
SMSA		0.775		0.696	
Welfare Benefits[a]		594.921	156.655	571.309	152.570
AFDC-UP		0.572		0.426	
Unemployment Rate		7.066	2.328	6.447	2.301
Average Wage		8.615	1.385	8.194	1.444
Income per Capita (1000)		11.428	1.986	10.633	2.076
AFDC Cases per Capita		0.016	0.014	0.015	0.012
Percent Aged		0.110	0.018	0.106	0.019
Percent Kids		0.212	0.028	0.224	0.031
Percent Black		0.193	0.133	0.204	0.109
Republican Governor		0.473		0.416	
Percent House Rep.		0.329	0.168	0.274	0.186
Percent Senate Rep.		0.332	0.193	0.271	0.206
No. of Observations		10,237		13,512	

[a]Combined cash value of benefits from AFDC, food stamps, and Medicaid for a family of four

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