Transitions from welfare and the employment prospects of low-skill workers

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Abstract:
This study examines the effects that labor market conditions and welfare policy changes had on single mothers' welfare participation and economic outcomes using longitudinal, individual-level data from the 1992 and 1993 panels of the Survey of Income and Program Participation (SIPP). The study uses special versions of the SIPP panels that include state and county identifiers and links the individual information to county-specific measures of low-skill employment opportunities and state measures of welfare policies. It estimates transition models of program entry and exit and regression models of economic outcomes. The study finds that employment conditions and welfare benefit levels were significant determinants of single mothers" welfare participation and economic success over the period 1992-95. However, it does not find statistically distinguishable differences in participation and economic success between states that did and did not reform their welfare programs through waivers to the federal rules.

JEL Classification: I3, J3

Article:
1. Introduction

Sweeping reforms in state welfare programs, initiated first through Section 1 115 waivers to the Social Security Act in the early 1990s and later in response to the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996, were intended to "end welfare as we know it." The waiver and PRWORA reforms promoted employment as a route out of poverty by imposing work requirements, changing benefit formulas, setting time limits on participation, and increasing transitional and diversionary support. While the general goal of increasing economic self-sufficiency was widely shared, many people thought that specific provisions of the reforms were punitive. Critics were especially concerned that the low-skill labor market would not be able to absorb all the people being forced off the welfare rolls or to replace their lost benefit income.

We now know that the critics' worst fears were not realized and that welfare reform coincided with a historic tightening of the labor market. The outcomes have been mostly positive. Welfare caseloads, which peaked at 5.1 million families in March of 1994, fell by more than half through the late 1990s. By September 2002, the welfare caseload had fallen to 2 million families (Committee on Ways and Means 2003). Economic and social circumstances for disadvantaged families generally improved. For instance, the poverty rate among families with children declined from 17.4% in 1993 to 12.7% in 2000 (U.S. Bureau of the Census 2003). An open question remains, though, regarding the extent to which the surging labor market contributed to the caseload declines and well-being improvements. This question has become more consequential as the United States confronts a weak economy and rising unemployment as well as a decision about whether to reauthorize the PRWORA.

This study investigates how skill-specific employment prospects affected welfare participation and economic outcomes for single mothers in the years immediately preceding the enactment of the PRWORA, during the time when states were experimenting with welfare waivers. Specifically, the analysis draws data from the 1992 and 1993 panels of the Survey of Income and Program Participation (SIPP). The SIPP contains person-, family--and household-level information on program participation, employment, income, poverty status, and other personal characteristics. The study links the person--and family--level information from the SIPP to year--and county-specific measures of low-skill employment opportunities that were constructed in an earlier analysis (Ribar 2003). With these combined data, the study estimates transition models of program entry and exit and regression models of economic outcomes for single mothers.

Beyond examining the role of economic conditions, the study also addresses some other issues that are related to welfare reform. First, it investigates the effects that an early set of reforms, which occurred in the form of waivers granted to states in the operation of their Aid to Families with Dependent Children (AFDC) programs, had on program participation and economic outcomes. The changes that were implemented under these waivers included several policies, such as time limits on benefit receipt and work requirements, that were later included as provisions in the PRWORA. Second, the study examines the effects that the general decline in benefit levels had on single mothers' welfare receipt and economic well being. Over the 1990s, the average real value of the maximum cash benefit for a family of four dropped by one-filth. The reduction in benefits continued a trend that began in the late 1970s and contributed to cash assistance becoming less and less attractive. Third, the analyses include some limited measures of the availability of paid child care. Child-care constraints have long been viewed as a potential barrier to single mothers' sell-sufficiency. The PRWORA consolidated many of the then-existing federal child-care programs and reoriented them toward the goal of economic self-sufficiency.

Estimation reveals that local labor market conditions were a statistically and substantively important determinant of welfare receipt and single mothers' economic well being. The analysis also indicates that other policy-relevant factors such as benefit levels and child-care availability had some effects. However, the study's other measures for welfare reform indicators for the adoption of welfare waivers--are not significantly associated with mothers' welfare participation or their economic outcomes.

The remainder of this study is organized as follows. Section 2 reviews some of the previous empirical research that has attempted to measure the impact of local labor market conditions, program characteristics, and child-care availability on welfare recipiency and other outcomes. Section 3 describes the data that are used in the present analysis. The empirical models for welfare transitions and economic outcomes are specified in section 4. Estimation results are also presented in section 4. Conclusions are offered in section 5.

2. Background

At the time the PRWORA was enacted, several analysts expressed concerns regarding the availability of employment for welfare recipients (see, e.g., Nightingale and Haveman 1995 and the concerns raised earlier by Danziger and Weinberg 1986 and Gueron and Pauly 1991). In fact, a number of site-specific studies (Weicher 1995; Kleppner and Theodore 1997: and several other job gap studies performed by the Jobs Now Coalition for Minnesota: the Northwest Policy Institute for Washington, Oregon, Montana, and Idaho: the Arkansas Advocates for Children and Families; the California Budget Process; the Maine Department of Labor; and the Vermont Peace and Justice Center) starkly predicted that the influx of former welfare recipients would overwhelm the low-skill labor market and drive up unemployment. Many analysts were also concerned about what would happen when the economic expansion, then already four years old, ended and former recipients were forced to compete for jobs in a declining job market.

For the most part, these concerns were not realized. Welfare caseloads, which started to decline prior to the enactment of PRWORA, continued to fall afterward. The Council of Economic Advisors (1999) reported that the number of welfare recipients declined 13% from 1993 to 1996 and 33% from 1996 to 1998. The growth in the economy, and job growth in particular, was so strong that low-skill unemployment and poverty actually fell.

An analysis by Lerman, Lowest, and Ratcliffe (1999) suggested that the labor market was able to absorb most of those leaving welfare.

Research attention has turned to examining the economic and policy changes that were responsible for the decline in caseloads and investigating how these changes affected economic outcomes for former welfare recipients and at-risk families. A number of researchers, including the Council of Economic Advisors (1997. 1999), Bartik and Eberts (1999), Figlio and Ziliak (1999), Card and Lemieux (2000), Hoynes (2000), Gittleman (2001), and Klerman and Haider (2004), have examined the effects of employment conditions on patterns of welfare receipt. Most of these studies found that tight labor markets reduced recipiency. (1) Because Blank (2002) has recently provided a comprehensive survey, the discussion in this section only summarizes the results from this literature.

The studies by the Council of Economic Advisors (1997, 1999), Figlio and Ziliak (1999), and Gittleman (2001) additionally considered the role of welfare reform in caseload declines. Other studies by Grogger (2000) and Schoeni and Blank (2000) also looked at policy changes. With the exception of the analysis by Figlio and Ziliak, these studies concluded that the implementation of time limits, work requirements, and other restrictions under the waivers granted to various states prior to the PRWORA and under the Temporary Assistance for Needy Families (TANF) programs after PRWORA explained much of the decline in recipiency. Figlio and Ziliak countered, however, that once employment dynamics were taken into account, the economy became a more important factor.

A few studies have reported that other policy changes also contributed to the caseload decline. Lemke et al. (2000) assembled a meticulous set of descriptors for the local availability, cost, and quality of child care for welfare families in Massachusetts and found that child-care subsidies and the provision of early education programs sped the transition from welfare to work. Meyer and Rosenbaum (2000) considered the extensive set of changes that accompanied welfare reform, including expansions of the earned income tax credit (EITC), Medicaid eligibility, training programs for recipients, and child-care assistance, and how these expansions affected single mothers" employment relative to that of other groups. They concluded that these accompanying changes, especially the changes in the EITC, substantially increased the incentives to work among single mothers.

A separate line of research has examined how welfare reform and the economic expansion affected outcomes for welfare recipients, single mothers, and women generally. The U.S. General Accounting Office (GAO 1999) summarized the separate research from 17 states regarding outcomes for families who had recently left welfare. The summary indicated that many adults in these "leaver" families were successful in finding employment but that their incomes were generally low and that a substantial fraction of them ended up returning to welfare. Schoeni and Blank (2000) undertook a more comprehensive, nationwide evaluation of economic outcomes and were more sanguine about the effects of welfare reform. They concluded that welfare reform promoted employment, increased family incomes, and reduced poverty among less-skilled women. Other research (see the review in Ribar 2003) points to the importance of a strong local economy for improving employment and earnings for low-skill women and men.

This study incorporates several of the methodological features from the existing studies while adding some important innovations. First, as with the research by Schoeni and Blank (2000), the present study examines the effects of labor market conditions and welfare policy on program participation and a broader set of economic indicators. By considering several different outcomes and empirical approaches, the study can establish which of its findings are robust and bolster confidence that its conclusions are not an artifact of a particular measure or technique.

Second, this study uses individual-level data. Much of the recent caseload research has used aggregate data. The few recent studies that examined individual observations, such as Gittleman (2001), Grogger (2000), and Hoynes (2000), as well as earlier microeconomic-level studies by Blank and Ruggles (1996); Fitzgerald (1995);

Gleason, Rangarajan, and Schochet (1998); and Harris (1993, 1996) have shown the importance of controlling for personal characteristics such as age, race, family composition, and education that affect both welfare receipt and employment opportunities.

Third, this study departs from earlier work by considering relatively compact areas--counties or in some cases groups of counties--to define the boundaries of local labor markets. Most of the recent studies of caseload declines have used states (or in one case regions) to define the boundaries of the labor market. Only one recent national study (Gittleman 2001) has used smaller areas. (2) Labor market conditions can vary greatly within states, and it is not unusual to observe both declining and expanding areas within the same state. Ribar (2003) has shown that estimates of the effects of local labor market conditions are sensitive to the level of geographic aggregation. Three other recent studies (Hoynes 2000; Lemke et al. 2000; Klerman and Haider 2004) also used small area data but only considered single states. The use of state-specific data vastly reduces the amount of policy variation that can be examined. It may also be difficult to generalize the results if the state's population or welfare program are unique in some way.

Fourth, this study also departs from previous research by examining local employment and wage conditions that are specific to women with different levels of schooling. Most of the existing studies have adopted very general measures, such as the overall unemployment rate, to describe local labor market conditions. Only Bartik and Eberts (1999) and Gittleman (2001) have explicitly considered the employment prospects of low-skill and low-wage individuals who make up much of the welfare caseload. (3) This study improves on their measures.

3. Data

This study estimates econometric models of transitions into and out of the AFDC program. It also estimates models of economic outcomes for single mothers and for former AFDC recipients. There are several large, purely cross-sectional data sources such as the Current Population Survey (CPS) and the Integrated Quality Control System that can provide snapshot information on families" behavior at a point in time. Longitudinal information, however, on transitions into and out of the AFDC program and outcomes after leaving the program are available only in a few data sets, such as the SIPP, the National Longitudinal Surveys/NLS), and the Panel Study of Income Dynamics (PSID).

The investigation focuses on the SIPP. The SIPP is preferred because of the large number of households interviewed (roughly 20,000 pet panel), its broad sampling scheme (the SIPP is representative of the entire population, whereas each of the NLS samples focuses on a particular age cohort), and its short recall horizon (the interviews are conducted at four-month intervals as opposed to one-year intervals in the NLS and PSID surveys). The study extracts program participation histories for unmarried women with children from the 1992 and 1993 panels of the database. The 1992 panel was followed through 10 waves of interviews: its data cover the period from tall 1991 through spring 1995. The 1993 panel was followed through nine waves: its data cover the period from fall 1992 through fall 1995. (4)

Using a general population database, like the SIPP, is advantageous because the analysis is able to examine the behavior of current, former, and potential welfare recipients. A fundamental challenge to using a general sample, however, is the relatively small size of the recipient population. Although the SIPP oversamples low-income individuals, a single panel is not likely to have interviewed more than a few hundred people from the target group. Following Blank and Ruggles (1996) and Fitzgerald (1995), the analysis uses the overlapping panel design from the SIPP to increase the sample size.

The SIPP collects monthly, and in some cases weekly, data on the economic and program participation variables that are the focus of this study. However, the survey also suffers from a well-known "seam" problem. The problem arises because some respondents, who have trouble recalling the exact start of an event, impute their behavior all the way back to the start of the interview period (e.g., some respondents who have been off AFDC for three months incorrectly report that they have been off AFDC for the entire four-month period). This

misreporting results in more transitions being recorded when adjoining months cross waves of the survey than when they occur within a wave. To reduce the seam problem and to reduce the size of the longitudinal data set, the study uses four-month (wave) aggregates for many of its variables.

The target sample consists of individuals and families who were potentially eligible to participate in the AFDC program and, thus, might have been directly affected by changes in the program. At the time the data were collected, single-parent families with children under 18 years old were eligible to participate if they had low levels of income and assets. Two-parent families with children were also eligible to participate in the AFDC Unemployed Parent program if one of the parents was unemployed and if the family met other income and asset criteria. The income and asset cutoffs for each of the programs varied from state to state. The set of potentially eligible individuals and families could be very broad if we consider everyone who could qualify under the program rules through some change in their work, marriage, or child bearing behavior. The study focuses on the narrower group of unmarried mothers with children under 18 years old present in the household. Single mothers were categorically eligible for AFDC, and a large proportion could become financially eligible if they were unable or unwilling to work. Specifically, the study includes observations for waves in which women were single parents with children under 18 years old for at least one month during the wave. The study follows these women from the first wave in which they were observed to be a single mother until the time that they married, left the sample, had missing data, no longer had children in the age range, or reached the end of sample. (5)

As mentioned, the SIPP oversamples low-income families and other types of people. To make the sample nationally representative, sampling weights need to be applied. However, because of the study's complicated selection procedures, its numerous exclusions, and the different forms of attrition, it is difficult to rescale the weights for analysis sample. To check the sensitivity of the estimation results, several versions of the study's models were reestimated using alternative weights. The results of these specifications did not vary much from models that were unweighted. Accordingly, the study reports only the unweighted results.

To measure participation in the AFDC program, the study creates a dummy variable that equals one if the woman's family participated at any time during the wave and zero if they did not participate. The study then considers transitions on a wave-by-wave basis. Families that did not receive AFDC benefits in the previous wave constitute the risk set for transitions into the program; families that received benefits constitute the risk set for continuation on (conversely, transitions out of) the program. Because of the way that the participation variable is constructed, it is possible that the continuation outcomes mask some month-to-month exit and reentry behavior. (6) The study's variable can be viewed as a relatively stringent indicator of independence from the AFDC program.

Economic outcomes are also measured on a wave-by-wave basis. An important indicator of economic success is family income. The study deflates family income in each month by the monthly consumer price index for all urban consumers (CPI-U) and then sums the deflated values. For the small number of families with incomplete income information, the study extrapolates from the available data to form a four-month aggregate. As a specific indicator for insufficient incomes, the study constructs a poverty status dummy measure that is set to one if the family's four-month income falls below its needs. To account for the possibility that families draw on resources from other household members, the study also constructs a four-month measure for household income. To capture work behavior, the study creates separate dummy variables for women who worked at all and women who worked all weeks during the wave.

Several personal characteristics are extracted from the SIPP and used as explanatory variables. These characteristics include the mother's age, race, ethnicity, completed schooling, family size, and children's ages. To reduce potential endogeneity problems associated with human capital investment and fertility, the indicators for schooling, family size, and children's ages are measured in the initial wave in which the mother is observed.

Longitudinal data on the characteristics of state welfare programs have been merged with the individual-level data from the SIPP. To describe the attractiveness of participating in the AFDC program, the study uses the

maximum AFDC benefits available to a family with no income of the same size as the woman's family at the start of her spell. (7) To measure the effects of welfare reform. the study also includes a binary indicator for whether the state received a waiver from the federal government to modify a major part of its AFDC program (CEA 1997). Data on six specific types of waivers--changes in time limits, work requirements, earnings disregards, Job Opportunities and Basic Skills (JOBS) program exemptions, JOBS sanctions, and family caps--were also used in some sensitivity analyses.

To capture the availability of formal child care, the study uses data from the County Business Patterns files on the number of child-care establishments in the county of residence in each year. It divides the number of establishments by the number of children aged 0 to 4 years old in the county to form a per-child measure. (8)

The key remaining variables are descriptors for local, skill-specific labor market opportunities. As one measure of low-skill wage opportunities, the study includes the state minimum wage. The minimum wage variable is taken from papers by Neumark, Schweitzer, and Wascher (1998) and Neumark (2001).

Additionally, the study uses constructed measures of skill-specific employment probabilities and wages for the county of residence. Currently, reliable direct measures of wage and employment opportunities tot different demographic and skill groups are only available for large geographic areas such as regions and populous states or at 10-year intervals (from the decennial census) for some smaller areas. To characterize year-to-year opportunities at the local level, the analysis uses results from an earlier study (Ribar 2003), which constructs indirect annual measures from 1989 to 1996 for all counties by combining skill-specific information on earnings and employment from the Sample Edited Detail File (SEDF) of the 1990 decennial census and the 1990-1997 annual demographic files of the CPS with annual industry-specific reformation from the Regional Economic Information System (REIS). Specifically, the earlier study regressed the individual-level employment and wage data for women from the SEDF and CPS files separately by education level on controls for age, race, and ethnicity: current and lagged values of a local employment index derived from the RE1S; state policy variables: a general set of time dummies: and a general set of county or labor market area dummies. Estimates from these regressions were then combined with local employment data from the REIS and individual-level data on education, age, race, and ethnicity from the SIPP to impute local, skill-specific wage and employment probabilities for each woman in the current study's sample. Details of the imputation procedure are provided in the Appendix. The imputed wage and employment measures can be interpreted as capturing the average opportunities available for women of the same age, race, and ethnicity within the woman's county of residence in a given year.

Means and standard deviations of the explanatory variables for the study's sample of unmarried mothers are reported in Table 1. The first column of Table 1 lists statistics for the first wave that the women are observed. The next two columns list statistics conditional on the women's AFDC participation status in the previous wave: these two groups constitute the risk sets for entry into and exit from welfare in the subsequent transition analyses. The descriptive statistics in the first column indicate that women of African and Hispanic origin are overrepresented in the sample. The statistics also indicate that the sample is predominantly low skill: two-thirds of the women have a high school education or less.

4. Empirical Results

Probit Models of Welfare Transitions

For each woman i who heads a family with children, we observe a sequence of up to 10 AFDC participation outcomes over the course of the SIPP. The study estimates probit models of the transitions between these outcomes. There are two types of transitions that can occur in each time period: women who are not participating in one period can enter the program in the next, and women who are participating in one period can leave.

Let [h.sup.*.sub.Ei](t) be a latent index which represents the net benefits to woman i of entering (or reentering) AFDC in period t conditional on not participating in the previous period. The net benefits of transitioning into the AFDC program are assumed to be a linear function of observed characteristics, [X.sub.i](t), and unobserved characteristics, [[epsilon].sub.i](t), such that

(1) [h.sup.*.sub.Ei](t) = [X.sub.i](t)[[beta].sub.F] + [[epsilon].sub.i](t)

Women are assumed to transition into AFDC if the net benefits are positive, so actual transitions follow [h.sub.Ei](t) = 1 if [h.sup.*.sub.Ei] > 0 and [h.sub.Ei] = 0 otherwise.

The AFDC continuation decision is specified similarly, et [h.sup.*.sub.Ci](t) be a latent index that represents the net benefits of remaining on AFDC conditional on participating in the previous period. The net benefits are assumed to be a linear function of observed characteristics and unobserved characteristics, [[zeta].sub.i]i(t), such that

(2) [h.sup.*.sub.Ei](t) = [X.sub.i](t)[[beta].sub.C] + [[zeta].sub.i](t)

The actual outcomes follow [h.sub.Ci](t)= 1 (the woman continues on AFDC) if [h.sup.*.sub.Ei](t) > 0 and [h.sub.Ei](t) = 0 (she exits), otherwise.

Each of the error terms in the model is assumed to be a function of a permanent individualspecific component and a transitory component. The error terms can be written

(3) [[epsilon].sub.i](t) = [[mu].sub.Ei] + [e.sub.i](t) and [[zeta].sub.i](t) = [[mu].sub.Ci] + [C.sub.i](t).

The transitory components [e.sub.i](t) and [c.sub.i](t) are assumed to be normally distributed with means of zero and variances of (1 - [p.sup.2.sub.E]) and (1 - [p.sup.2.sub.C].), respectively. The transitory components are further assumed to be independent of the permanent components and of one another. The permanent components [[mu].sub.Ei]and [[mu].sub.Ci] are also assumed to be normally distributed with means of zero. The components have variances of [p.sup.2.sub.E] and [p.sup.2.sub.C] and may he correlated (the correlation coefficient is [P.sub.EC]). With these assumptions, the permanent components are specified as jointly, normally distributed random effects.

To account for initial conditions and to avoid dropping left-censored data, the study includes an additional probit specification to model the participation decision in the first observation period. Ideally, data on each woman's entire AFDC participation history would be available. However, the SIPP has only limited retrospective data on welfare use, and a specification that accounts for initial conditions is necessary. (9) The latent index for participation in the initial period is expressed

(4) [h.sup.*.sub.1i](t) = [X.sub.i](t)(1)[[beta].sub.1] + [v.sub.1i](t)

Actual participation follows [h.sub.1i] = 1 if [h.sup.*.sub.1i] > 0 and [h.sub.1i] = 0, otherwise. The error term [v.sub.1i] is assumed to be normally distributed with mean zero and variance one; it is also assumed to be independent of the subsequent transitory errors but correlated with the permanent components [[mu].sub.Ei] and [[mu].sub.Ci]. (10)

The complete model for each woman's participation sequence is a system of equations consisting of the initial conditions probit (Eqn. 4) and up to nine additional transition probits. (Eqns. 1 or 2) corresponding to each wave of reported information. The actual sequence of transition probits depends on the woman's history. For instance, the model for a woman who never participated in AFDC would consist of the initial conditions probit for the first wave and entry probits (Eqn. 1) for the remaining waves. The model for a woman who participated continuously would consist of the initial conditions probit followed by a sequence of continuation probits (Eqn.

2). The model for a woman who was on the program for the first year (three waves) of the SIPP and off the program thereafter would consist of the initial conditions probit followed by three continuation probits followed by a series of entry probits. And so on. The equations are estimated using maximum likelihood. To incorporate the random effects, the study extends the Hermite Gaussian quadrature procedure for one-factor models described by Butler and Moffitt (1982) to accommodate two factors. (11)

The chief advantage of the study's empirical approach is that it allows for separate models for entry into and exit from AFDC. Klerman and Haider (:2004) have shown that economic conditions can have different effects on each of these transitions. Ignoring these differences can make the caseload appear less sensitive to economic and policy changes than it really is. Thus, the study improves on previous cross-section analyses that examined welfare caseloads without distinguishing between entry and exit. The specification also incorporates a simple form of state dependence--the entry and exit models are each first-order Markov processes. In addition, the specification allows for person-specific unobserved heterogeneity through the random effects terms; spurious negative duration dependence can arise in event-history models that omit such controls (Heckman 1981a). Through Equation 4, the model also adopts Heckman's (1981b) approximate approach for addressing endogenous initial conditions.

An alternative event-history approach would be to estimate hazard models for entry and exit that incorporate more flexible specifications for duration dependence. Blank and Ruggles (1996), Fitzgerald (1995), and Fitzgerald and Ribar (2004b) have estimated continuous time hazard models of program entry and exit with such duration controls. Unfortunately, it is much more difficult to account for initial conditions in these more general specifications. The studies listed above addressed the initial conditions problem by dropping ongoing (left-censored) spells and only considering new spells on or off welfare. In short panel surveys like the SIPP, dropping ongoing spells results in a considerable loss of data; it can also lead to a loss of representativeness, since long spells end up being disproportionately excluded. Thus, although the study restricts the form of state dependence in its models, it is able to accommodate left-censored data and use mote observations from the SIPP sample.

Estimated coefficients and standard errors for two specifications of the system consisting of the initial conditions equation (Eqn. 4) and the welfare transition equations (Eqns. 1 and 2) are reported in Table 2. Each of the specifications includes variables for local economic opportunities, welfare policy, child-care availability, and urban residence. They also include year dummy variables (year fixed effects) as well as dummy variables for census divisions (regional fixed effects); for brevity, the coefficients on the area dummies are not reported. (12) The two sets of specifications differ in their inclusion of personal controls. The first three columns of Table 2 list results from models that omit personal controls; the next three columns list estimates from specifications that include these controls.

Specification tests indicated that controls for random effects should be included in the models. Tests also indicated that the random effects were correlated with one another ([[rho].sub.EC] [not equal to] 0) and with the error term in the initial conditions model ([[alpha].sub.E] [not equal to] 0 and [[alpha].sub.C] [not equal to] 0). Tests also revealed that the census division dummies were jointly significant. Accordingly, the study reports results from models that control for correlated random effects, initial conditions, and regional effects.

Comparing the results from the two specifications in Table 2, the estimated effects of the policy, economic, and geographic variables appear to be moderately sensitive to the inclusion of personal controls. In particular, the estimated effects of welfare benefits, local wages, and urban residence are substantially stronger in the specification that omits personal controls. The sensitivity of the estimates to the inclusion of personal controls suggests that the findings of aggregate analyses by the Council of Economic Advisors (1997, 1999), Figlio and Ziliak (1999), and others might be biased.

Because the coefficients for the personal controls are jointly significant and because they impact the other estimates, the discussion focuses on results that include the controls. If we look at the coefficients for the

personal controls, most are significant with the anticipated signs. For instance, African origin and the total number of children are positively associated with both transitions onto and continuation on welfare. Higher levels of schooling and older children are negatively associated with entering and remaining on welfare.

When we turn to the economic and policy variables we see that the local, skill-specific employment rate is significantly, negatively associated with transitions into and continuation on AFDC. One way to examine the magnitudes of the implied effects is in terms of elasticities. The elasticity for entering AFDC (evaluated at the means of the data) is -1.2, while the elasticity for exiting AFDC is 1.4. Another way to examine the magnitudes is to consider the actual changes in skill-specific employment rates and the estimated impact on the transition probabilities. In 1993, mothers in the analysis sample faced an average local skill-specific employment rate of 69.0%. By the end of the panel in 1995, the average employment rate had increased to 70.5%. The effect of this change in employment would have been a 0.001 decrease in the probability of entering welfare and a 0.002 increase in the probability of exiting welfare. From 1993 to 1995, the probability of entering welfare in the analysis sample actually decreased from 0.033 to 0.019 while the probability of exiting welfare increased from 0.065 to 0.088. So, changes in employment probabilities accounted for 6% of the decrease in entry and 9% of the increase in exits. (13)

AFDC benefits also appear to be important. The coefficient on benefits is significantly positive in the transition specifications. The estimated entry and exit elasticities are moderately large, 0.7 and -0.5, respectively. From 1993 to 1995, the average maximum AFDC benefit decreased 5% from $426 to $407. As with the local employment rate, the changes in benefits are calculated to have contributed to a 0.001 decrease in the probability of entry and a 0.002 increase in the probability of exit.

With the exception of the large, positive coefficient for the minimum wage measure in the entry equation, the coefficients for the remaining local economic and policy variables are statistically insignificant with small implied effects. The positive coefficient on the minimum wage variable suggests that higher minimum wages contribute more to employment losses than to earnings gains; as I discuss, however, in the sensitivity results section, this finding is not robust to the inclusion of additional area controls. Several of the remaining, insignificant coefficients on the economic and policy variables have large standard errors. So, we cannot rule out large effects for these variables. For instance, the point estimate on the waiver variable in the entry equation is effectively zero, but the upper bound of a 95% confidence interval for that estimate is consistent with a 0.008 decrease in the entry probability (about half the size of the overall decrease in entry probabilities from 1993 to 1995). The upper bound on the waiver coefficient from the continuation equation is consistent with an increase in the exit probability of 0.003.

A comparison of the coefficients from the initial conditions model and the separate entry and exit models illustrates some of the differences between analyses of levels and transitions. The initial conditions model is a model of the incidence or level of welfare participation. Some of the coefficients in the initial conditions model have the same signs and significance as in the transition models. For instance, the coefficients on African origin, Hispanic origin, education, children's characteristics, and welfare benefits are significant and similarly signed in the initial conditions model and at least one of the transition models. Other coefficients, however, differ across the models. The coefficient on the local wage variable is significantly negative in the initial conditions model with personal controls but insignificant in the corresponding transition models. The coefficient on the local employment variable is insignificant in the initial conditions model but significantly negative in the two transition models. Differences also appear in the time trend coefficients. The differences between the initial conditions, entry models, and exit models buttress the findings of Klerman and Haider (2004) that models of program transitions lead to different conclusions than models of program levels.

Economic Outcomes for Single Mothers and Former Welfare Recipients

Table 3 lists results from regression and probit models that examine the effects of personal characteristics, local economic conditions, and state policies on economic outcomes for single mothers. By considering a general sample of single mothers rather than the narrower set of former welfare participants, the study can consider the determinants of economic success among both potential and actual recipients. This is important because economic conditions and welfare reform may have affected the behavior of potential recipients and deferred them from initially entering the rolls.

The first column of Table 3 reports coefficients from a regression of the natural logarithm of family income against the listed variables, as well as a set of census division indicators. The observations for the regression come from longitudinal data: so, the standard errors are adjusted for repeated observations. The estimates indicate that family incomes follow a U shape over the mother's age, with the minimum income occurring around age 34. Incomes are lower for mothers of African and Hispanic origin as well as those with several children. Family incomes increase with the level of education, the age of the youngest child, and urban residence. Among the economic and policy variables, the local skill-specific wage rate is strongly, positively associated with family incomes--the implied elasticity is 0.6. The local skill-specific employment probability and the state minimum wage have negative associations with incomes. The welfare policy variables have small, insignificant coefficients: the coefficient for child-care availability is also insignificant. The results indicate that family incomes for single mothers were affected by changes in local economic conditions but not by changes in the AFDC program. However, given that wages for low-skill workers were essentially stagnant over this period and that low-skill employment tell through 1993 and staged only a weak recovery thereafter, the aggregate impact of economic conditions on family incomes was probably slight.

The next column in Table 3 lists results from a regression of the natural logarithm of household income. The household income variable picks tip resources that might have been available to unmarried mothers who had a cohabiting partner or who shared a residence with parents or other family members. The estimation results, though, are very similar to those for the family income variable. The only important differences are that the local employment probability and state minimum wage are weaker and insignificant in the household income regression.

The third column in Table 3 reports coefficients from a probit model for poverty status. The indicator for poverty status, which is based on the filmily income variable, focuses on the lower part of the income distribution. The measure also incorporates an adjustment for family size. Despite these differences, the results are similar to the previous two regressions. Poverty status follows a U pattern in the mother's age: is more prevalent for mothers of African and Hispanic origin, mothers with large families, and mothers who face higher minimum wages: and is less prevalent for educated mothers, mothers with older children, and mothers who have better wage opportunities. One notable difference from the earlier results is that child-care availability is estimated to reduce the incidence of poverty.

The last two columns from Table 3 list results from probit models of work status. The dependent variable in the fourth column is an indicator for any employment during the wave, while the dependent variable in the fifth column is an indicator for working all weeks during the wave. The results across the two columns are quite similar. For both work measures, the personal variables have the same signs as in the income regressions. Differences from the earlier regressions do appear, however, in the economic and policy variables. For instance, AFDC benefits are estimated to have a significant negative effect on both measures of work effort. The local skill-specific employment probability and the availability of child care have significant positive coefficients. The local wage variable, which was significantly, positive in the income regressions, has small, insignificant coefficients in the work effort probits. The waiver indicators remain insignificant.

The study next repeats the analysis of economic outcomes but concentrates on just the subgroup of former welfare recipients. Results from this analysis are presented in Table 4. Table 4 lists estimates from regression and probit models that account for selectivity from the binary welfare nonparticipation decision. All of the models are estimated using a two-equation, maximum likelihood HECKMAN or HECKIT specification in

Stata. The welfare nonparticipation selection equations are not shown but are specified with a dependent variable that equals one if the woman was off welfare and are specified to contain the same explanatory variables as the models in Table 3. The regression and probit models for the economic outcomes include all of the variables listed in Table 3 except for AFDC benefits and state waivers. These variables were excluded to better identify the selection parameters. The variables are arguably irrelevant to nonrecipients' economic outcomes, aside from an effect on potential participation.

In three out of the four specifications, the coefficients for the correlations between the unobserved determinants of women's nonparticipation status and economic outcomes are statistically significant, indicating that selection controls are necessary. All of the coefficients have the anticipated signs--unobserved characteristics that keep single mothers off welfare also contribute to better economic outcomes.

There are fewer significant coefficients in Table 4 than in Table 3. This mostly reflects the decrease in precision when the sample is restricted to welfare leavers, although there are a few substantive changes in the coefficients. For instance, the coefficients on African origin, Hispanic origin, and the number and age distribution of children become noticeably smaller. Beyond these changes, the coefficients on the economic variables and most other variables from the previous specifications carry through with the same signs and approximate magnitudes. Thus, the responsiveness of former welfare recipients to changes in economic conditions appears to be similar to that of other single mothers.

Sensitivity Analyses

Several additional versions of the transition probit and economic outcome models were estimated to gauge the sensitivity of the estimates to various specification issues. One set of respecifications involved adding dummy controls for a few large states such as California, Texas, and New York and controls for nonrepresentative states and areas such as Alaska, Hawaii, and the District of Columbia to the census division indicators. By and large, the reported estimates were not sensitive to the inclusion of these controls. The lone exception was the strong, positive coefficient for the minimum wage variable in the welfare transition probit, which became weaker when the state controls were added.

To examine whether specific provisions of welfare reform mattered more than others or were working at cross purposes, the models from Tables 2 and 3 were respecified to include separate indicators for the implementation of different types of waivers. Indicators were included for waivers regarding term limits, work requirements, family caps, JOBS program exemptions, JOBS program sanctions, and changes in earnings disregards. The coefficients for the specific indicators were jointly and individually insignificant in all of the models. Thus, the finding that single mothers' participation and economic success were not significantly associated with the adoption of a welfare waiver is robust to the use of either detailed or omnibus measures. The coefficients for the other variables were also robust to the respecification.

Lastly, the models were respecified to include general labor market measures--current and lagged values of ratio of civilian jobs to the size of the population aged 15 to 64 years old in each county--instead of the skill-specific wage and employment measures. (14) Most of the existing studies have used general measures, and it is possible that findings in some of the studies regarding the importance of welfare reform relative to economic conditions might be sensitive to the choice of economic measure. When the general measures were used in place of skill-specific measures, the general measures performed poorly. In most cases, the coefficients were small and insignificant. In the few cases where significant coefficients were generated, the coefficients on the current and lagged measures were offsetting so that the net impact was effectively zero. Changing the measures did not have a large effect on the welfare reform measures, so the conclusions regarding these variables appear to be robust. However, the change did affect the child-care results. When general measures were used, the coefficient on child-care centers per child became significant in the transition probits and the outcome equations for single mothers. One explanation for the stronger results is that the child-care centers are not only a source of day care for children but also a potential source of employment for low-skill mothers.

5. Conclusion

This study uses individual-level data on single mothers' welfare participation, economic outcomes, and personal characteristics from the SIPP and combines these with state-level measures of welfare policies, local area measures of skill-specific wage and employment opportunities, and county-level measures of child-care availability. The data, which covered the period from fall 1991 to the end of 1995, are used to examine the effects that economic conditions, welfare benefits, welfare waivers, and other lectors had on single mothers" transitions into and out of welfare and on their incomes and employment.

The principal methodological contribution of the study is its careful consideration of local wage and employment opportunities for women with different levels of education. Much of the existing research has relied on general economic measures that have covered very large areas or lumped together conditions for men and women with different levels of skills. Testing confirms that the new measures perform better than general employment variables in predicting single mothers' welfare participation and economic success.

The study also employs an econometric methodology for analyzing caseload behavior that distinguishes between transitions into and out of the AFDC program. In addition, the methodology controls for time-invariant, unobserved factors that might be associated with these transitions. It also controls for complications associated with women initially being observed in an ongoing participation or nonparticipation spell.

The estimation results indicate that local labor market conditions are a significant determinant of welfare entry and exit and of single mothers' economic well being. Changes in the availability of skill-specific jobs for women are estimated to have a large impact on program participation; the estimated elasticities for the probabilities of moving onto and off welfare both exceed one in absolute terms. Improvements in local employment rates for the women in the sample are estimated to have directly accounted for about 6% of the decrease in entry rates and 9% of the increase in exit rates from 1993 to 1995. Skill-specific employment rates similarly have a sizeable effect on single mothers' labor force participation, while skill-specific wage rates have an influence on family incomes and poverty.

The analysis also indicates that the availability of child care may have had some effect on outcomes for single mothers. The ratio of child-care centers to small children is significantly, positively related to single mothers' employment and negatively related to their incidence of poverty. The estimates are not substantively large--the implied elasticities for each outcome are less than 0.1. However, when one considers that the measure only describes a portion of the child-care market and that the effects are averaged across women with and without small children, the results take on more importance. The conclusion that child-care responsibilities restrict single mothers" economic opportunities is reinforced by estimates that indicate that welfare participation and poverty decline and incomes and employment rise as the youngest child ages.

At the same time, the estimation results provide no strong statistical evidence that single mothers' welfare participation and economic outcomes were different across states that adopted or did not adopt welfare waivers. This partly reflects imprecision in the estimated coefficients for the waiver variables; thus, the study cannot rule out an effect. The evidence is stronger to suggest that another important policy change--the decline in the real value of welfare benefits--played a role over this period. The coefficient estimates indicate that less generous benefits discouraged both entry into and continuation on the AFDC program and led to higher levels of work effort among single mothers. Changes in AFDC benefit levels appear to have contributed about as much to the decline in participation as changes in local employment conditions.

One crucial caveat to the findings regarding welfare policy has to do with the limitations of the data set, which only extends to 1995. By the end of the panel, many of the waivers had only been in place for a few months. If there was any appreciable lag in implementing the waivers or communicating the provisions to potential recipients, it might not be possible to detect an effect in these data. A related issue is the implications of the research for the PRWORA. Clearly, the study only indirectly addresses the effects of the PRWORA because its

data stop well before the legislation was enacted or implemented. In future work, researchers might consider using data from the Survey of Program Dynamics, which followed some of the respondents from the 1992 and 1993 panels of the SIPP, or data from later panels of the SIPP to examine the more recent reforms.

Appendix: Wage and Employment Imputation

The primary data for the regressions used in the imputations come from the Sample Edited Detail File of the 1990 decennial census and confidential versions of the 1990-1997 annual demographic (March) supplements of the current population survey (CPS). The information in the SEDF comes from the long forms which were administered as part of the 1990 decennial census. Thus, it represents a very large (one-in-six) cross-section sample of the U.S. population. The March files of the CPS are smaller and sample roughly 60,000 households per year. Detailed geographic information is attached to both the SEDF and confidential versions of the CPS.

Individual-Level Variables

The SEDF and March files of the CPS record comparable information on whether a person was employed during the previous year, the number of weeks the person worked, the number of hours worked in an average week, and the amount of money earned from different sources. From these measures, the analysis constructs a dummy variable indicating employment during the previous year and a continuous variable for hourly earnings during the previous year (total personal earnings divided by weeks and typical hours worked). Nominal amounts were reexpressed in constant dollars using the CPI-U.

In addition to the economic variables, the SEDF and CPS also contain comparable reformation on the person's sex, age. ethnic origin, and schooling level. The regressions use the sex and age information as recorded. From the ethnic origin data, the analysis constructs dummy indicators for people of African origin and people of other non-European origins (mostly native Americans, Asians, and Pacific Islanders): the omitted category is European origin. It also constructs a separate dummy variable for Hispanic origin which may overlap with the other racial/ethnic categories. Using the schooling information, the analysis distinguishes between four types of people: those who have not completed high school, those who have completed high school (or equivalent) but have not gone on to college, those who have completed some college, and those who have graduated college.

From the combined data set, the analysis selects noninstitutionalized, civilian women who were 16 to 64 years of age. It then makes a number of data exclusions. First, it excludes individuals younger than 24 years who were enrolled in school. Second, it drops observations for individuals whose earnings were in the top 1%, of all earnings for each year or whose average weekly hours exceeded 98. Third, it excludes observations if the calculation of real hourly or weekly earnings was unreasonable--below 75 [cents] or above $250 for hourly wages and below 75 [cents] or above $10,000 for weekly wages. Fourth, it drops observations with allocated economic or demographic data. Even with these exclusions, the resulting data set still contains several million observations. To make the data more manageable, the analysis randomly samples observations from the SEDF for counties with more than 100,000 residents and reweights the remaining observations accordingly. All of the statistical results incorporate sampling weights scaled to the annual sample sizes.

Measures of Local Labor Market Conditions

With the geographic identifiers in the SEDF and CPS files, the analysis links the individual-level observations to measures of local labor market conditions. To form the labor market variables, the analysis combines annual county-level place-of-work industry employment information from the REIS with employment weights derived from the SEDF to form county-of-residence measures of skill-specific opportunities. In particular, it uses total annual employment in one-digit Standard Industrial Code industries for each county. The industry-specific data in the REIS are based primarily on administrative records (ES-202 forms) submitted by employers to state employment agencies and are reported on a place of work rather than a place of residence basis. Let [E.sub.REIS](j. c, t) denote the total number of employees in industry j (= 1, J) in county c (= 1, C) in year t

derived from the REIS. Let [e.sub.SEDF](s, r, j, c) denote the fraction of employees in industry j and county c with skills s who commute from county r as estimated from the SEDF. The analysis constructs an annual skill- and residence-specific employment index for year t using the weighting formula

(A.1) [??](s, r, t) = [J.summation over (j = 1)][[C.summation over (c = 1] [e.sub.SEDF](s, r, j, c) [E.sub.REIS](j, c, t)]

In the regressions, this figure is reexpressed as a proportion of working adults by dividing through by the total population aged 15 64 years old in the county of residence.

The combined individual-level data from the SEDF and CPS are linked to the employment-weighted local labor market variables and used to estimate skill-specific regressions of the form

(A.2) y(i, s, r, t) = [[beta].sub.1s][??](s, r, t) + [[beta].sub.2s][??](s, r, t - 1) + [[beta].sub.Xs](i, s, r, t) + [[epsilon].sub.st] + [[mu].sub.s] + [epsilon](i, s, r, t)

In Equation A.2. y(i, s, r, t) denotes an economic outcome (either employment or log hourly earnings): X(i, s, r, t) is a vector of individual-specific attributes; the [beta] terms are skill specific coefficients: the [delta]s are skill- and year-specific effects: the [mu]s are skill-and area-specific effects; and [epsilon](i, s, r, t) is an individual-specific error. The area-specific effects and the general time effects are estimated as fixed effects. The employment models are estimated as probits. The wage specifications are estimated as selectivity-corrected regressions.

For the area-specific effects, the analysis includes separate controls for each county that had 1990 populations in excess of 35.000 people. While this identifies only about a third of all counties, the included counties account for nearly 90% of the total U.S. population. For the remaining counties, the analysis includes controls for labor market areas (LMAs) within states, as defined by Tolbert and Sizer (1996). Altogether, the analysis accounts for 1578 different areas: 1132 individual counties and 446 balance-of-LMA-within-state areas.

Estimation results from Equation A.2 are combined with county of residence, year, education, age, race, and ethnicity data from the SIPP and employment information from the REIS to impute the wage and employment probabilities used in the study.

Table 1. Descriptive Statistics for the Analysis Variables

	Initial Observation		Mothers off AFDC Last Wave	
Variable	Mean	Standard Deviation	Mean	Standard Deviation
AFDC participation	0.291	0.454	0.027	0.162
Family income	8424	9826	9721	7931
Household income	9949	10350	11227	8712
Poverty status	0.423	0.494	0.236	0.425
Worked at all	0.593	0.491	0.810	0.393
Worked all weeks	0.417	0.499	0.704	0.457
Age	31.621	9.137	34.948	8.594
African origin	0.271	0.444	0.236	0.425
Hispanic origin	0.151	0.358	0.127	0.333
High school graduate	0.372	0.484	0.389	0.487
Some college	0.349	0.477	0.439	0.496
Number of children under 18	1.674	0.945	1.619	0.856
Age of youngest child	6.050	5.376	6.908	5.012
Maximum AFDC benefits	429.330	198.547	402.235	176.657

State waiver in effect	0.153	0.360	0.235	0.424
Local wage	4.907	1.432	5.274	1.422
Local employment probability	0.689	0.167	0.729	0.139
Civilian employment per working-age adult	0.822	0.231	0.834	0.221
Minimum wage	4.936	0.218	4.804	0.227
Child-care centers per child	0.0024	0.0012	0.0027	0.0014
Urban residence	0.777	0.416	0.777	0.416
Year = 1993	0.206	0.404	0.360	0.480
Year = 1994	0.114	0.317	0.338	0.473
Year = 1995	0.045	0.208	0.119	0.324
Observations	6006		17,625	

	Mothers on AFDC Last Wave	
Variable	Mean	Standard Deviation
AFDC participation	0.927	0.260
Family income	4320	4966
Household income	5072	5691
Poverty status	0.796	0.403
Worked at all	0.225	0.418
Worked all weeks	0.116	0.320
Age	30.143	8.098
African origin	0.395	0.489
Hispanic origin	0.228	0.420
High school graduate	0.335	0.472
Some college	0.206	0.404
Number of children under 18	2.103	1.219
Age of youngest child	4.010	4.248
Maximum AFDC benefits	476.569	211.531
State waiver in effect	0.302	0.459
Local wage	4.570	1.244
Local employment probability	0.632	0.177
Civilian employment per working-age adult	0.826	0.271
Minimum wage	4.810	0.233
Child-care centers per child	0.0024	0.0012
Urban residence	0.799	0.401
Year = 1993	0.374	0.484
Year = 1994	0.333	0.471
Year = 1995	0.110	0.313
Observations	7705	

Unweighted data from the 1992 and 1993 SIPP.

Table 2. Determinants of AFDC Participation

	No Personal Controls		
Variable	Initially on AFDC	Transition onto AFDC	Continue on AFDC
Age	--	--	--
Age squared (/100)	--	--	--
African origin	--	--	--
Hispanic origin	--	--	--

High school graduate	--	--	--
Some college	--	--	--
Number of children under 18	--	--	--
Age of youngest child	--	--	--
ln (maximum AFDC benefits)	1.251 *** (0.075)	0.636 *** (0.113)	0.553 *** (0.125)
State waiver in effect	0.061 (0.060)	-0.021 (0.061)	0.106 (0.072)
ln (local wage)	-1.205 *** (0.098)	-1.111 *** (0.135)	-0.233 (0.163)
Local employment probability	-0.827 *** (0.150)	-0.732 *** (0.199)	-0.886 *** (0.203)
ln (minimum wage)	1.648 *** (0.577)	2.701 *** (0.608)	0.175 (0.747)
Child-care centers per child	-14.488 (17.104)	-9.327 (19.252)	-26.166 (22.172)
Urban residence	0.144 *** (0.046)	0.192*** (0.060)	0.228 *** (0.060)
Year = 1993	-0.026 (0.052)	0.119 ** (0.060)	0.082 (0.072)
Year = 1994	-0.172 ** (0.074)	0.074 (0.072)	0.021 (0.086)
Year = 1995	-0.126 (0.108)	0.104 (0.097)	-0.094 (0.114)
[[rho].sub.E], [[rho].sub.C]	--	0.747 *** (0.033)	0.566 *** (0.060)
[[rho].sub.EC], [[alpha].sub.E], [[alpha].sub.C]	0.361 * (0.208)	0.581 *** (0.104)	0.714 *** (0.165)
ln likelihood		-7049.62	

With Personal Controls

Variable	Initially on AFDC	Transition onto AFDC	Continue on AFDC
Age	-0.006 (0.017)	-0.022 (0.024)	0.031 (0.024)
Age squared (/100)	-0.018 (0.024)	-0.006 (0.034)	-0.060 * (0.033)
African origin	0.424 *** (0.046)	0.336 *** (0.061)	0.268 *** (0.064)
Hispanic origin	0.119 ** (0.054)	0.159 ** (0.070)	0.022 (0.072)
High school graduate	-0.438 *** (0.103)	-0.334 *** (0.098)	-0.034 (0.102)
Some college	-0.598 *** (0.120)	-0.418 *** (0.119)	-0.223 * (0.122)
Number of children under 18	0.129 *** (0.028)	0.089 ** (0.039)	0.085 ** (0.036)
Age of youngest child	-0.029 *** (0.006)	-0.038 *** (0.008)	-0.024 *** (0.008)
ln (maximum AFDC benefits)	0.743 *** (0.104)	0.324 ** (0.145)	0.263 * (0.145)
State waiver in effect	0.075 (0.061)	-0.002 (0.064)	0.114 (0.072)
ln (local wage)	-0.536 *** (0.156)	-0.154 (0.189)	0.120 (0.202)
Local employment	-0.014	-0.785 **	-1.076 ***

probability	(0.394)	(0.374)	(0.370)
ln (minimum wage)	0.490	2.075 ***	-0.111
	(0.609)	(0.672)	(0.758)
Child-care centers	-31.574 *	-19.413	-26.877
per child	(17.770)	(20.147)	(22.709)
Urban residence	-0.032	-0.018	0.133 **
	(0.052)	(0.065)	(0.065)
Year = 1993	-0.087	0.106 *	0.056
	(0.053)	(0.063)	(0.073)
Year = 1994	-0.314 ***	-0.012	-0.038
	(0.076)	(0.076)	(0.088)
Year = 1995	-0.301 ***	-0.012	-0.171
	(0.113)	(0.102)	(0.116)
[[rho].sub.E], [[rho].sub.C]	--	0.721 ***	0.615 ***
		(0.039)	(0.057)
[[rho].sub.EC], [[alpha].sub.E],	0.644 ***	0.537 ***	0.705 ***
[[alpha].sub.C]	(0.154)	(0.156)	(0.194)
ln likelihood		-6741.88	

Unweighted data are from the 1992 and 1993 SIPP for 6006 individual (31,366 longitudinal) observations. Estimates are from maximum likelihood probit models that account for initial participation in AFDC. Controls for census divisions are included but not reported. Standard errors appear in parentheses.

* Significant at 10% level.

** Significant at 5% level.

*** Significant at 1% level.

Table 3. Determinants of Economic Outcomes for Single Mothers

Variable	ln (Family Income)	ln (Household Income)
Age	-0.068 ***	-0.064 ***
	(0.009)	(0.008)
Age squared (/100)	0.100 ***	0.087 ***
	(0.012)	(0.044)
African origin	-0.130 ***	-0.249 ***
	(0.022)	(0.022)
Hispanic origin	-0.083 ***	-0.127 ***
	(0.028)	(0.028)
High school graduate	0.274 ***	0.203 ***
	(0.044)	(0.041)
Some college	0.446 ***	0.319 ***
	(0.050)	(0.047)
Number of children	-0.032 **	-0.063 ***
under 18	(0.013)	(0.014)
Age of youngest child	0.012 ***	0.012 ***
	(0.003)	(0.003)
ln (maximum	-0.052	-0.048
AFDC benefits)	(0.051)	(0.050)
State waiver in effect	-0.0005	0.005
	(0.022)	(0.021)
ln (local wage)	0.626 ***	0.500 ***
	(0.072)	(0.068)
Local employment	-0.272 *	0.031
probability	(0.164)	(0.153)
ln (minimum wage)	-0.563 **	-0.217
	(0.265)	(0.252)
Child-care centers	6.022	6.860
per child	(7.240)	(7.238)

Urban residence	0.045 *	0.073 ***
	(0.026)	(0.025)
Year = 1993	-0.004	0.012
	(0.015)	(0.015)
Year = 1994	0.006	0.025
	(0.022)	(0.021)
Year = 1995	-0.008	0.028
	(0.033)	(0.031)
[R.sup.2]	0.164	0.172

Variable	Poverty	Work Any	Work All
Age	0.064 ***	0.079 ***	0.107 ***
	(0.015)	(0.016)	(0.015)
Age squared (/100)	-0.109 ***	-0.090 ***	-0.119 ***
	(0.021)	(0.022)	(0.021)
African origin	0.322 ***	-0.225 ***	-0.171 ***
	(0.041)	(0.043)	(0.041)
Hispanic origin	0.170 ***	-0.099 *	-0.069
	(0.051)	(0.053)	(0.051)
High school graduate	-0.434 ***	0.249 ***	0.331 ***
	(0.073)	(0.079)	(0.076)
Some college	-0.665 **	0.350 ***	0.440 ***
	(0.084)	(0.091)	(0.088)
Number of children under 18	0.276 ***	-0.143 ***	-0.143 ***
	(0.028)	(0.027)	(0.027)
Age of youngest child	-0.024 ***	0.034 *	0.029 ***
	(0.005)	(0.005)	(0.005)
ln (maximum AFDC benefits)	0.152	-0.243 **	-0.311 ***
	(0.097)	(0.099)	(0.094)
State waiver in effect	0.010	-0.044	-0.037
	(0.041)	(0.042)	(0.041)
ln (local wage)	-0.830 ***	0.089	0.134
	(0.129)	(0.134)	(0.125)
Local employment probability	-0.245	1.764 ***	1.363 ***
	(0.278)	(0.299)	(0.298)
ln (minimum wage)	1.082 **	-0.496	-0.531
	(0.478)	(0.477)	(0.460)
Child-care centers per child	-28.051 **	30.131 **	22.702 *
	(13.605)	(14.468)	(13.652)
Urban residence	-0.062	-0.012	0.039
	(0.047)	(0.049)	(0.046)
Year = 1993	0.017	-0.064 **	-0.055 *
	(0.029)	(0.030)	(0.029)
Year = 1994	-0.008	0.027	0.028
	(0.042)	(0.042)	(0.041)
Year = 1995	0.024	0.021	0.004
	(0.061)	(0.062)	(0.060)
[R.sup.2]	--	--	--

Unweighted data are from the 1992 and 1993 SIPP for 6006 individual (31,366 longitudinal) observations. Estimates are from OLS and probit models. Controls for census divisions are included but not reported. Robust standard errors that account for repeated individual observations appear in parentheses.

* Significant at 10% level.

** Significant at 5% level.

*** Significant at 1% level.

Table 4. Determinants of Economic Outcomes for Welfare Leavers

Variable	ln (Family Income)	ln (Household Income)
Age	-0.124 ***	-0.114 ***
	(0.030)	(0.027)
Age squared (/100)	0.170 ***	0.153 ***
	(0.043)	(0.038)
African origin	-0.006	-0.118 *
	(0.062)	(0.061)
Hispanic origin	-0.013	-0.048
	(0.077)	(0.064)
High school graduate	0.411 ***	0.122
	(0.139)	(0.113)
Some college	0.592 ***	0.257 *
	(0.167)	(0.132)
Number of children under 18	0.044	0.002
	(0.032)	(0.031)
Age of youngest child	-0.006	-0.004
	(0.009)	(0.009)
ln (local wage)	0.654 ***	0.457 **
	(0.230)	(0.210)
Local employment probability	-0.799	0.189
	(0.563)	(0.496)
ln (minimum wage)	1.262	0.021
	(1.012)	(0.848)
Child-care centers per child	-4.053	-7.489
	(19.754)	(17.732)
Urban residence	-0.080	-0.103
	(0.073)	(0.067)
Year = 1993	0.114 *	0.080
	(0.069)	(0.062)
Year = 1994	0.223 **	0.194 **
	(0.090)	(0.089)
Year = 1995	0.239 *	0.201
	(0.124)	(0.123)
[rho]	0.116	0.392 **
	(0.110)	(0.194)
ln likelihood	-6080.25	-5909.09

Variable	Poverty	Work All
Age	0.067	-0.017
	(0.046)	(0.034)
Age squared (/100)	-0.105	0.026
	(0.064)	(0.048)
African origin	0.242 **	-0.078
	(0.096)	(0.090)
Hispanic origin	0.053	-0.056
	(0.117)	(0.109)
High school graduate	-0.274	0.067
	(0.205)	(0.187)
Some college	-0.598 **	0.088
	(0.256)	(0.189)
Number of children under 18	0.160 ***	-0.005
	(0.055)	(0.045)
Age of youngest child	0.0005	0.015
	(0.013)	(0.011)
ln (local wage)	-0.425	-0.021
	(0.354)	(0.298)
Local employment probability	-0.247	1.361 **
	(0.741)	(0.602)
ln (minimum wage)	-0.701	0.271

	(1.263)	(1.074)
Child-care centers per child	-35.535	35.231
	(28.946)	(29.222)
Urban residence	0.177	-0.176*
	(0.112)	(0.100)
Year = 1993	-0.115	0.078
	(0.094)	(0.079)
Year = 1994	-0.414 ***	0.373 ***
	(0.115)	(0.099)
Year = 1995	-0.527 ***	0.474 ***
	(0.154)	(0.134)
[rho]	-0.841 ***	0.940 ***
	(0.186)	(0.085)
ln likelihood	-5343.18	-5411.98

Unweighted data are from the 1992 and 1993 SIPP for 596 individual (1809 longitudinal) observations. Estimates are from maximum likelihood models that account for selection from AFDC nonparticipation. Controls for census divisions are included but not reported. AFDC participation models also include controls for maximum AFDC benefits and program waivers. Robust standard errors that account for repeated individual observations appear in parentheses.

* Significant at 10% level.

** Significant at 5% level.

*** Significant at 1% level.

Notes

(1) In addition, van der Klaauw and van Ours (2003) found evidence that economic conditions affect welfare transitions in the Netherlands.

(2) Among the earlier caseload studies, Fitzgerald (1995) and Harris (1993) also examined substate labor markets.

(3) Barlik and Eberts (1999) constructed national weighting matrices and used these to reweight available state-level industrial employment figures to represent employment for high school graduates and welfare recipients. Gittleman (2001) used state-level measures of wages at the 20th percentile to capture potential recipients' wage opportunities.

(4) It would be useful to extend the analysis to consider later data. Respondents in the 1992 and 1993 panels of the SIPP have been followed in the Survey of Program Dynamics (SPD). Also, data from new (1996 and 2001) panels; of the SIPP have been released. Unfortunately, versions of the SPD and the later SIPP panels; with the detailed geographic identifiers; were not available at the Census; Bureau at the time this research was; conducted. Accessing these data would require a new agreement with the Census Bureau.

(5) Restricting the sample to unmarried mothers introduces some endogenous selection. Other work by Fitzgerald and Ribar (2004a) uses data from the SIPP to examine the effects that economic conditions and welfare reform have had on family formation decisions.

(6) Blank and Ruggles (1996) and Fitzgerald (1995) also ignored short breaks in program participation spells.

(7) Terra McKinnish kindly provided longitudinal figures on maximum benefits available to families of different sizes.

(8) Al Nucci from the Center for Economic Studies at the U.S. Census Bureau kindly provided the age-specific population estimates data.

(9) The welfare history topical module in the SIPP simply asks whether the woman has participated in the past, the start date and duration of her first participation spell, and the number of previous spells. Thus. complete histories are recorded for women with no prior participation and women with a single prior spell but not for women with multiple prior spells.

(10) The study uses a factor specification [v.sub.1i] is assumed to follow [v.sub.1i] = [[alpha].sub.E] [[mu].sub.Ei] + [[alpha].sub.C] [[mu].sub.Ci] which + [[eta].sub.i], where the coefficients [[alpha].sub.E] and [[alpha].sub.C] are factor loadings and [[eta].sub.i] is a normally distributed error term that is independent of [[mu].sub.Ei] and [[mu].sub.Ci]. The estimation procedure normalizes the variance of [[eta].sub.i] so that the variance of [v.sub.1i] is one. Thus, Corr [[epsilon].sub.i](t), [v.sub.1i] = [[alpha].sub.E] [p.sup.e.sub.E] + [[alpha].sub.C] [p.sub.EC][p.sub.E][p.sub.C] and Corr [[zeta].sub.i](t), [v.sub.1i] = [[alpha].sub.C] [p.sup.e.sub.C] + [[alpha].sub.E] [p.sub.EC][p.sub.E][p.sub.C].

(11) All of the reported transition probit models use nine quadrature points for each of the random effects (81 points total) in the likelihood calculations. Adding more quadrature points did not have an appreciable effect on the estimates.

(12) Some previous research has used state fixed effects to control for time-invariant effects. Because of the relatively small size of the data set, it was not possible to include a general set of state controls.

(13) These effects are computed by multiplying the changes in employment with the estimated marginal effects evaluated at the means of the data. The implied effects are similar when changes in transition probabilities are calculated for each woman in the sample and then averaged.

(14) The study did not examine different geographical definitions of local labor markets. The study of Fitzgerald (1995) found that economic variables describing labor market areas (groups of counties) had a stronger association with welfare transitions than variables describing counties in some instances. The analysis from which the study's local economic variables were taken (Ribar 2003) carefully examined several alternative geographic definitions and concluded that the county was the most appropriate geographic unit.

References

Bartik, Timothy J., and Randall W. Eberts. 1999. Examining the effect of industry trends and structure on welfare caseloads. In Economic conditions and welfare reform, edited by Sheldon H. Danziger. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, pp. 119-57.

Blank, Rebecca M. 2002. Evaluating welfare reform in the United States Journal of Economic Literature 40:1105-66.

Blank, Rebecca M., and Patricia Ruggles. 1996. When do women use aid to families with dependent children and food stamps? The dynamics of eligibility versus participation. Journal of Human Resources 31:57-89.

Butler, J. S., and Robert A. Moffitt. 1982. A computationally efficient quadrature procedure for the one-factor multinomial probit model. Econometrica 50:761-64.

Card, David, and Thomas Lemieux. 2000. Adapting to circumstances: The evolution of work, school, and living arrangements among North American youth. In Youth employment and joblessness in advanced countries, edited by David G. Blanchflower and Richard B. Freeman. Chicago: University of Chicago Press, pp. 171-213.

Committee on Ways and Means, U.S. House of Representatives. 2003, Green book. Background material and data on programs within the jurisdiction q[the Committee on gays and Means. Washington, DC: U.S. GPO.

Council of Economic Advisors. 1997. Explaining the decline in welfare receipt, 1993-1996. Unpublished paper. The White House.

Council of Economic Advisors. 1999. The effects of welfare policy and the economic expansion on welfare caseloads: An update. Unpublished paper, The White House.

Danziger, Sheldon H., and Daniel Weinberg, eds. 1986. Fighting poverty: What works and what doesn't. Cambridge, MA: Harvard University Press.

Figlio, David N., and James P. Ziliak. 1999. Welfare reform, the business cycle, and the decline in AFDC caseloads. In Economic conditions and welfare reform, edited by Sheldon H. Danziger. Kalamazoo, MI: Upjohn Institute for Employment Research, pp. 17-48.

Fitzgerald, John M. 1995. Local labor markets and local area effects on welfare duration. Journal of Policy Analysis and Management 14:43-67.

Fitzgerald, John M., and David C. Ribar. 2004a. Welfare reform on family headship. Demography 41:189-212.

Fitzgerald, John M., and David Ribar. 2004b. Transitions in welfare participation and female headship. Population Research and Policy, Review. In press.

Gittleman, Maury. 2001. Declining caseloads: What do the dynamics of welfare participation reveal? Industrial Relations 40:537-70.

Gleason, Philip, Anu Rangarajan, and Peter Schochet. 1998. The dynamics of receipt of aid to families with dependent children among teenage parents in inner cities. Journal of Human Resources 33:988-1002.

Grogger, Jeff. 2000. Time limits and welfare use. NBER Working Paper No. W7709.

Gueron, Judith M., and Edward Pauly. 1991. From welfare to work. New York: Russell Sage Foundation.

Harris, Kathleen M. 1993. Work and welfare among single mothers in poverty. American Journal of Sociology 99:317-52.

Harris, Kathleen M. 1996. Life after welfare: Women, work, and repeat dependency. American Sociological Review 61:407-26.

Heckman, James J. 1981a. Statistical models for discrete panel data. In Structural analysis of discrete panel data with econometric applications, edited by Charles F. Manski and Daniel McFadden. Cambridge, MA: MIT Press, pp. 114-78.

Heckman, James J. 1981b. The incidental parameters problem and the problem of initial conditions in estimating a discrete time-series stochastic process. In Structural analysis of discrete panel data with

econometric applications, edited by Charles F. Manski and Daniel McFadden. Cambridge, MA: MIT Press, pp. 179-95.

Hoynes, Hilary W. 2000. Local labor markets and welfare spells: Do demand conditions matter? Review of Economics and Statistics 82:351-68.

Kleppner, Paul, and Nikolas Theodore. 1997. Work after welfare: Is the Midwest's booming economy creating enough jobs? Chicago: Chicago Urban League.

Klerman, Jacob A., and Steven J. Haider. 2004. A stock-flow analysis of the welfare caseload. Journal of Human Resources. In press.

Lemke, Robert J., Ann Dryden Witte, Magaly Queralt, and Robert Witt. 2000. Child care and the welfare to work transition. NBER Working Paper No. W7583.

Lerman, Robert I., Pamela Loprest, and Caroline Ratcliffe. 1999. How well can urban labor markets absorb welfare recipients. In Assessing the New Federalism policy brief No. A-33, Washington, DC: Urban Institute.

Meyer, Bruce D., and Dan T. Rosenbaum. 2000. Making single mothers work: Recent tax and welfare policy and its effects. National Tax Journal 53:1027-61.

Neumark, David. 2001. The employment effects of recent minimum wage increases: Evidence from a pre-specified research design. Industrial Relations 40:121-44.

Neumark, David, Mark Schweitzer, and William Wascher. 1998. The effects of minimum wages on the distribution of family incomes: A non-parametric analysis. NBER Working Paper No. W6536.

Nightingale, Demetra Smith, and Robert H. Haveman. 1995. The work alternative: Welfare reform and the realities of the job market. Washington, DC: Urban Institute Press.

Ribar, David C. 2003. County-level estimates of the employment prospects of low-skill workers. In Worker well-being and public policy, research in labor economics, volume 22, edited by Solomon W. Polochek. Amsterdam: JAI, pp. 227-68.

Schoeni, Robert F., and Rebecca M. Blank. 2000. What has welfare reform accomplished? Impacts on welfare participation, employment, income, poverty, and family structure. NBER Working Paper No. 7627.

Tolbert, Charles M., and Molly Sizer. 1996. U.S. commuting zones and labor market areas: A 1990 update. Washington, DC: U.S. Department of Agriculture.

U.S. Bureau of the Census. 2003. "'Historical poverty tables." Accessed 6 October 2003. Available http://www.census.gov/hhes/ poverty/histpov/hstpov4.html.

U.S. General Accounting Office. 1999. Welfare reform: Information on former recipients' status. Report No. GAO/HEHS-9948, Washington, DC: U.S. GAO.

van der Klaauw, Bas, and Jan C. van Ours. 2003. From welfare to work: Does the neighborhood matter? Journal of Public Economics 87:957-85.

Weicher, John. 1995. The labor market for welfare recipients in the Milwaukee metropolitan area. Unpublished paper, Hudson Institute.