The Labor Market Effects of Welfare Reform

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Abstract

The recent reform of the federal welfare system was meant to encourage recipients to leave welfare and enter the workforce. If the reform is successful there are likely to be effects felt throughout the low–skilled end of the labor market. As former welfare recipients enter the labor market, they may exert downward pressure on wages or displace employment of others already in the labor market. Since there has been limited changes in eligibility for federal welfare programs from which to draw inferences, the magnitude of these labor market effects are uncertain.

This study analyses an earlier welfare reform, the elimination of the General Assistance program in Michigan in October 1991, that may provide useful evidence on the effect of the 1996 Federal reform. General Assistance was a large–scale, state–administered program that provided benefits to people who fell through the cracks in federal anti–poverty programs. In all, about 82,000 able–bodied adults lost benefits. Comparisons with changes in labor market outcomes in other states suggest that the labor–market entry of former GA recipients in Michigan led to a 0.9 to 2.6 percentage point increase in employment among high school drop–outs and a 1.2 to 2.7 percent decline in weekly hours. There is little evidence of a systematic effect on hourly earnings among men; however, earnings among women may have fallen by as much as 5.8 percent.

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1 Introduction

The 1996 reform of the federal welfare system was meant to encourage recipients to leave welfare and enter the workforce. To accomplish this goal, time–limitations have been placed on individuals' receipt of benefits, and state governments are required to meet federal targets for moving welfare recipients into the workforce. State governments have also been given increased flexibility in the design and implementation of programs in order to meet these goals. If the reform is successful there are likely to be general equilibrium effects felt throughout the low–skilled end of the labor market: an increase in labor supply among former recipients is likely to lead to downward pressure on wages or displace employment of others in the labor market.[1] Because there have not been large changes in eligibility for benefits or in the incentives facing welfare recipients in the past, however, the magnitude of these effects is uncertain. Analyses of closely related changes in the labor market and welfare programs are necessary to better inform the current debate.

This study analyses an earlier welfare reform, the elimination of the General Assistance program in Michigan in October 1991, that may provide useful evidence on the effect of the 1996 Federal reform. Cash benefits for able–bodied adults without children were terminated, leaving about 100,000 people – equal to about two percent of the state labor force – to turn to the labor market, their families, or other sources for income.[2] To identify the effect of the increase in labor force participation by former GA recipients, changes in wages, employment, labor force participation, and hours of work in Michigan are compared with changes in other states that did not reform their General Assistance program or have other significant shocks to their labor market in the two years before or after the reform. A comparison group of 11 states from the Midwest and northeastern United States are used: New Hampshire, Massachusetts, New York, New Jersey, Pennsylvania, Ohio, Indiana, Wisconsin, Missouri, Virginia, and West Virginia. Given the geographic proximity and economic links between Michigan and these states, they provide a credible counterfactual of how labor markets in

[1] See Bartik (1998) for a recent survey of this issue.

[2] Other studies of the effects of the elimination of the GA program in Michigan include Danziger and Kossoudji (1995), Bound, Kossoudji and Ricart-Moes (1998), and Danziger, Carlson and Henly (1999).

Michigan would have evolved in the absence of welfare reform.[3]

A potential problem for future work on the labor market effects of federal welfare reform is the difficulty in predicting what would have happened to low–wage labor markets in the absence of the reform. Though individual states are given vastly increased autonomy in the design of welfare programs, inter–state variation in the rate of exit from welfare will be the result of differences in local economic conditions, state policies, and other aspects of labor markets in each state. It may be difficult, therefore, to identify the causal role of welfare reform on labor market outcomes.[4] A unique feature of the elimination of the GA program in Michigan, in contrast, is the availability of a clear counterfactual group, people in neighboring states. Much attention will be paid, however, to controlling for differences between the labor market in Michigan and in the comparison states that are not due to the elimination of the General Assistance program.

Of the 100,000 GA recipients in Michigan at the time the program was eliminated, some were able to enroll in other government programs, in particular people with disabilities or with dependent children. It is estimated that approximately 82,000 people lost all benefits.[5] Although there are no previous estimates of the labor supply response among Michigan residents who lost benefits, a survey by Danziger and Kossoudji (1995) indicates that in the second year after benefits were eliminated about 59% of the respondents had some cash earnings. At the time of the survey about 20% of their sample was employed and another 33% were looking for work.[6] A 50% labor supply response among the 82,000 recipients who lost benefits would represent an increase of one percent in the state labor force, and an increase of 8% in the labor force of people without a high school degree (excluding the fraction of

[3]These economic links may lead the labor market effects to be spread throughout both Michigan and the comparison states. This complicating factor is not examined and the assumption that only labor markets in Michigan were affected is maintained throughout.

[4]Indeed, a series of recent studies reach different conclusions on the effect of federal welfare reform on the decline in caseloads. See, for example, Blank (1997), U.S. Council of Economic Advisors (1997), and Ziliak *et al* (1997).

[5]This figure comes from Shapiro *et al* (1991).

[6]In the summer of 1993, Danziger and Kossoudji surveyed 426 former General Assistance recipients from Wayne (Detroit), Genesee (Flint), Saginaw, Eaton, and Osceola counties. They were only able to locate about one third of the sample to be drawn from Wayne county, and about half of the sample in the other four counties. If the least healthy, least mobile, and thus least likely to work are more likely to have remained in the same residence, their survey will likely understate the employment rate of former GA recipients.

former GA recipients who already were in the labor market while on aid, of course).

Before the estimation results, a simple model of labor supply and demand is described that illustrates some of the important effects that welfare reform in a local economy could have on the employment and earnings of others in the labor market. An important problem in using previous estimates of labor demand and supply elasticities in such a model is the lack of a consensus in the literature on the magnitude of these elasticities, in particular that of labor demand. This makes credible prediction from a theoretical model difficult.

The empirical analysis that follows focuses on identifying changes in economic outcomes among people without a high school degree, since that is the group most likely to be affected by increased labor market participation among former GA recipients. The data used to measure changes in labor market outcomes in Michigan come from the 1989 through 1993 monthly Current Population Survey. To measure changes among people with similar skills and who face similar labor market opportunities, people are classified into groups on the basis of their age, education, and gender. The basic econometric specification is a standard quasi–experimental, "treatment– and control–group" model in which the change in employment, hours, earnings, and labor force participation among groups two years before and after the elimination of the GA program are compared to the change in outcomes for similar groups in the comparison states over the same time period.

If there were factors other than the elimination of the GA program that differentially affected labor markets in Michigan and the control states, a simple comparison of changes in average outcomes between groups does not identify the effect of the elimination of GA benefits. Therefore, an important additional feature of the identification method is that changes in economic outcomes between Michigan and the comparison states are estimated conditional on differences between the states in business cycle effects and other unobservable labor demand shocks. Differences in labor demand are accounted for by allowing demand shocks to differentially effect the labor market outcomes of people of different ages, genders, and levels of education. These added controls are particularly important since the unemployment rate in Michigan fell faster than that in the comparison states following the recession in the early 1990's. This likely is a signal of different economic conditions in Michigan, rather than an effect of welfare reform, and consequently a comparison of economic outcomes that

ignores these differences will lead to a biased estimate of the effect of the elimination of the GA program.

The results show that employment among people without a high school degree – those who are most likely to be affected by increased labor market participation among former welfare recipients – increased by 0.9 to 2.6 percentage points, relative to the change in employment of people with a high school degree. Average hours of work among workers fell by 1.2 to 2.7 percent. There is little evidence of a systematic effect on hourly earnings among men; however, earnings may have fallen by as much as 5.8 percent among low–educated women.

2 The General Assistance Program in Michigan

General Assistance refers to state, county, or local welfare programs designed to provide cash payments to poor individuals who do not qualify for the main federally–financed income support programs, such as Aid to Families with Dependent Children (AFDC), Supplemental Security Income (SSI), or Unemployment Insurance (UI). AFDC provides cash benefits primarily to poor, single–parent families, although limited payments are also provided to two–parent families through the AFDC–UP program. Unemployment Insurance benefits are only available to those who previously held a qualifying job for a minimum length of time, and can only be drawn for up to 26 weeks. Finally, SSI provides benefits to low–income people over the age of sixty–five or who are disabled. Thus GA programs generally serve non–elderly single adults, childless couples, and families who do not qualify for AFDC or the Unemployed Parent program; people who do not meet the work history requirement for UI benefits or exhaust their UI benefits; and disabled people who await or do not qualify for SSI benefits.

According to a 1992 survey, twenty–one states and the District of Columbia had a General Assistance program with uniform state–wide rules in the early 1990's.[7] Ten additional states do not operate a GA program, but require each county or locally to do so. The remaining nineteen states do not have any state–wide program or requirements, though individual counties within these states may operate a program.

[7]See Nichols, Dunlap and Barkan (1992).

Prior to 1991 Michigan's GA program was run through the state's Department of Social Services. The monthly benefit was calculated in a manner similar to AFDC benefits: eligibility was limited to people with income and assets below certain thresholds, which varied by county and household size. Like AFDC benefits, additional labor earnings were taxed by the system, with a dollar–for–dollar reduction in GA benefits for each increase in earnings.

Possibly because General Assistance programs vary substantially across and within states, they have not received nearly as much scholarly attention as the major federal anti–poverty programs. However, the program in Michigan served nearly half as many families as AFDC program in the state: the average monthly GA caseload in 1990 was 97,860, with an average of 1.29 people per case; while the AFDC average monthly caseload in Michigan was 217,949, with an average of three people per case. In terms of cash payments, the average monthly GA grant per case in 1990 was $237.55, or about $6.14 per person per day. By comparison, the average AFDC family received $464.05 per month, or $5.16 per person per day.[8] General Assistance participants also receive medical benefits and, in most cases, food stamps.

Figure (1) plots both the monthly GA caseload from 1979 until the elimination of the program in 1991, and the unemployment rate among people without a high school degree in Michigan between 1979 and 1998.[9] The caseload increased during the recession of the early 1980's. Interestingly, while the unemployment rate peaked in 1983, the GA caseload continued to increase until early 1984. The unemployment rate declined though the mid-1980's, as did the caseload, and then began to rise in the late 1980's and early 1990's. The caseload also exhibits some seasonality, particularly in the latter years. The close connection between the unemployment and the caseload suggests that at least a portion of recipients were involved in the labor market.

As a response to fiscal pressures in the early 1990's, many state governments began to cut spending on social welfare programs in general, and General Assistance in particular.[10] The elimination of the GA program in Michigan was the most dramatic of all the early welfare

[8]Figures are from Department of Social Services, State of Michigan (1990). The AFDC figures refers to both Family Groups and Unemployed Parent participants.

[9]The unemployment rate data are from the March CPS and reflects labor force status in the week prior to the interview. The GA caseload data comes from the State of Michigan *Assistance Payment Statistics*, various months.

[10]For a summary of such policy changes at the state level see Shapiro *et al* (1991) and Lav *et al* (1993) .

reforms in terms of the number of people affected and the amount of lost benefits. On October 1, 1991 able–bodied adults without children lost all benefits. Families with dependent children were allowed to receive benefits under the new State Family Assistance program. Approximately 9,700 families were thought to be eligible for this program, though actual participation was about half that.[11] Adults who had been disabled for at least ninety days and had not qualified for SSI were placed in the new State Disability Assistance program. The average monthly caseload in this program in 1992 was 8,253. For most of these people SDA benefits were provided as interim assistance until SSI benefits were approved. In sum, then, about 82,000 people – or eighty–four percent of the original caseload – lost all benefits in Michigan as a result of the October, 1991 reforms.

3 A Simple Model of Welfare Reform

A standard approach to modeling the labor market impacts of the Michigan GA reform is to posit supply and demand functions for low–skilled labor, and treat the GA reform as an exogenous increase in the supply of labor.[12] The employment and wage effects depend on the elasticities of labor supply and demand. The expected change in wages is given by

$$\%\Delta\text{Wage} = \frac{-1}{\epsilon - \eta} \times \%\Delta\text{Labor force} \tag{1}$$

where η is the elasticity of labor demand, and ϵ is the elasticity of labor supply.[13] The change in employment among workers who were already in the labor market, a measure of displacement, is given by

$$\%\Delta\text{Employment} = \frac{-\epsilon}{\epsilon - \eta} \times \%\Delta\text{Labor force} \tag{2}$$

Without estimates of the labor supply response among former GA recipients, this study can only identify net changes in total employment, and not displacement among workers already

[11] Federal waivers were granted to Michigan in 1992 that allowed the state to change its AFDC eligibility criterion. This allowed many participants of the SFA program to enroll in AFDC.

[12] This simple model of the labor market assumes all workers are equally skilled, and ignores any general equilibrium effects of welfare reform on workers' income. These issues are dealt with more fully in an earlier version of this paper; see Lubotsky (1999).

[13] These formulas are found by specifying a labor market equilibrium of $D(w) = GA + S(w)$, where $D(w)$ is labor demand, $S(w)$ is labor supply, w is the wage rate, and GA is the number of new labor market entrants. Rearranging the total derivative of this condition gives the three formulas above.

in the market. In this simple model of supply and demand, the change in overall employment is given by

$$\%\Delta\text{Net Employment} = \frac{-\eta}{\epsilon - \eta} \times \%\Delta\text{Labor force} \tag{3}$$

Equations (1) through (3) can be used to forecast the effect of the elimination of the Michigan GA program on the change in wages and employment. In this context, what is the relevant labor market? What is the size of the increase in labor supply? And what are the magnitudes of the elasticities? Since GA recipients are likely to have a very low level of labor market skills, it is reasonable to suppose that the elimination of the GA program only affected the market for workers without a high school degree. In this case, a conservative estimate that one–quarter of the people who lost benefits, about 20,000 people, entered the labor market would mean an increase of four percent of the Michigan labor force without a high school degree.

Elasticity estimates from research outside of the area of welfare and welfare reform can be used to estimate the change in employment and wages that would result from this increase in the labor force, as previous analysts have done in forecasting the effects of the 1996 federal welfare reform.[14] The difficulty in drawing credible inferences from this work is that labor supply and demand elasticities for very low–skilled workers (and single parents in the case of federal welfare reform) may not be the same as those estimated for workers in general. For example, although most studies tend to find that labor supply among all workers is not very responsive to wages, Juhn, Murphy and Topel (1991) provide evidence that this may not be true among very low–skilled workers.

There is even deeper disagreement over the magnitude of the elasticity of labor demand. For example, closely related to the labor market effects of welfare reform is how labor markets respond to the influx of new, largely unskilled, immigrants. Most recent studies tend to find that immigrant inflows to specific U.S. cities had very small effects on the earnings of native–born workers.[15] Though small employment displacement effects are found, the results suggest that labor demand may be quite inelastic. Also related to the elasticity of labor demand

[14]See for example Mishel and Schmitt (1995) and Bernstein (1997).

[15]See, for example, the survey by Borjas (1994), as well as Borjas, Freeman and Katz (1992), Card (1997), and Schoeni (1997).

is the employment effect of increases in the minimum wage. Although a range estimates exist in the literature, most studies find relatively modest effects of minimum wages on employment, which suggests that labor demand may be elastic.[16] This lack of guidance about the relevant elasticities makes it very difficult to draw clear inferences from past work about wage and employment changes in the aftermath of welfare reform, and underscores the value of examining the impacts of the Michigan GA reform.

In the context of the effect of wage subsidies for low–wage workers, Katz's (1996) "best guess" are elasticities of labor demand and supply of -0.5 and 0.4. In this case, wages would be predicted to decline by 4.4 percent; employment among workers already in the labor market would decline by 1.8 percent; and total employment (among high school drop–outs and the entering former GA recipients) would increase by 2.2 percent. In this scenario, for each 100 new entrants to the labor market, there are only 56 new jobs and wages decline significantly.

These predicted changes in wages and employment are, however, quite sensitive to the assumed elasticities. For example, if the elasticity of labor demand is assumed to be inelastic, η equal to -3 instead of -0.5, while the elasticity of labor supply remains 0.4, then wages would decline by only 1.2 percent; employment among people already in the labor market would decrease by only 0.5 percent; and total employment would rise by 3.5 percent. In contrast to the first scenario, most of the increase in employment (88 percent) represents new jobs, and wage declines are quite modest. Thus depending on whether one believes the elasticity of demand for low–skilled labor is small in absolute value ($\eta = -.05$) or large ($\eta = -3.0$), the elimination of the GA program in Michigan would be expected to have a fairly large or fairly small impact on the low–skilled labor market.

4 Data and Descriptive Analysis

The data used to measure changes in economic outcomes in Michigan are from the monthly Current Population Survey. Each household in the CPS sample is interviewed for four months, then ignored for eight months, and then interviewed for the next four months

[16] See Card and Krueger (1995) and Neumark and Wascher (1996).

(corresponding to the same four calendar months they were interviewed in the previous year). In each interview respondents are asked about their current labor force status and weekly hours of work; only in their fourth and eighth interview are they asked about their usual weekly and hourly earnings. Respondents are asked about annual income and its sources, including welfare and public assistance participation, only in the March Supplement to the CPS.

Table (1) presents descriptive statistics for people who received public assistance income in the previous year and for the overall population in Michigan and the comparison states during 1989, 1990, and 1991, the period directly before the elimination of the GA program in Michigan.[17] Public assistance recipients in both Michigan and the comparison states are disproportionately nonwhite, unmarried, and poorly educated, relative to the general population. Contrary to some popular notions, public assistance serves men and women in roughly equal numbers. In Michigan, public assistance recipients are not more concentrated in urban areas than is the general population. In the comparison states, however, while only 29.1 percent of the general population lives in a Metropolitan Statistical Area with over one million people, 48 percent of sampled public assistance recipients live in such areas. Finally, as would be expected, people who were on public assistance in the prior year had very low employment rates, and very high rates of unemployment and labor market nonparticipation at the time of the survey. In Michigan, 26.3 percent of the public assistance group were employed at the time of the survey and 49.9 percent were not participants in the labor market.[18]

To get an idea of how the public assistance population in Michigan and the comparison states has changed over the recent past, Table (2) presents descriptive statistics for recipients over four time periods: 1979 to 1988, 1989 to 1991 (the pre–reform period used in this study),

[17]The sample is for people aged 16 to 54. Beginning in 1976 the March Supplement to the CPS asked respondents whether they received income during the previous calendar year from AFDC and from any other public assistance program. Most of the major federal cash transfer programs, such as Social Security and SSI, are separately identified in the CPS. Thus "Public assistance" primarily covers those who receive income from General Assistance programs, though in principle it could include other programs as well. The demographic and labor market variables in the table refer to the week prior to the March interview.

[18]It should be emphasized that due to the different time frame for the labor market and public assistance questions, these figures do not measure employment and labor market participation while the respondent is on public assistance.

1992 to 1993 (the post–reform period), and 1994 to 1996. The first row gives the sample size for each column; the second row uses the March CPS sample weights to estimate how many people this sample represents per year. As expected, the number of Michigan residents in the data who report income from non–AFDC public assistance drops considerably after 1991. The 81,269 estimated average public assistance population in Michigan in 1989 through 1991 is about twenty percent below what administrative records indicate the population to have been.[19] In the two years after the reform the number drops to 36,454 people. These remaining recipients may have been placed on the medical assistance program that began in 1991, or were originally on a public assistance program other than General Assistance.

The composition of the Michigan public assistance group changed relative to those in the comparison states in ways that conform to what would be expected from the elimination of benefits for able–bodied adults: The programs maintained or created were meant to serve the disabled and those with dependent children. The most telling statistics in Table (2) to this effect are that the proportion of public assistance recipients with a college degree in Michigan jumped from 19.5% in 1989–1991 to 37.1% in 1992–1993. This doubling was far greater than the increase in the comparison states, from 15.4% to 19.1%. As well, from 1989 to 1993 there was a large change in the labor force status of those on public assistance. Before the General Assistance program was eliminated, about half of public assistance recipients in Michigan were in the labor force and about one half of recipients in the labor force were unemployed. After the GA program was eliminated, however, the remaining public assistance recipients in Michigan were far more likely to be out of the labor force (65.6% in 1992–1993) and very few of those in the labor force were looking for work: their unemployment rate was 12.2% percent after 1992.

The bottom panel of Table (2) gives the percent of all people in the CPS who report income from AFDC and from non–AFDC public assistance. Public assistance recipiency drops from 1.6% to 0.7% in Michigan, while it rises from 1.0% to 1.1% in other states.

[19] According to the State of Michigan *Assistance Payment Statistics*, in September, 1991, there were 99,930 General Assistance cases in the state. It is likely that the Current Population Survey undercounts those most likely to have been on GA. The sampling error for these population estimates is also quite large. Blank (1997) finds that the CPS counts only about seventy–five percent of AFDC cases, which is consistent with the undercount found here for GA.

In the empirical analysis below, the comparison states provide the counterfactual estimate of how labor market outcomes in Michigan would have changed had their GA program not been eliminated. Tables (1) and (3) provide descriptive evidence on the comparability of Michigan and these other states. Ohio, Indiana, and Wisconsin are Michigan's closest neighbors, both in terms of geography and industrial composition, and are therefore natural states to include in the comparison group.[20] The group of comparison states also includes Massachusetts, New Hampshire, New Jersey, New York, and Pennsylvania in the Northeast and New England; Virginia and West Virginia further south; and Missouri to the southwest. While these eight states do not have as large a portion of their workforce in the durable manufacturing sector, they are comparable to Michigan in terms of the fraction of their workforce that is low–skilled, as measured by the proportion of their population without a high school degree or without any post–high school education.[21] The addition of these states to the comparison group increases the precision of the estimated counterfactual change in labor market outcomes.

Figures (2) and (3) plot the unemployment rate in Michigan and in the comparison states from 1980 to 1998. The unemployment rate among just Indiana, Ohio, and Wisconsin is shown, along with the unemployment rate among all 11 comparison states.[22] The first graph is the rate among all people aged sixteen to fifty–four, while the second is the rate among those without a high school degree. The vertical lines in each graph indicate the pre– and post–reform periods used in the empirical work below. The unemployment rate followed similar trends in Michigan and in the comparison states, though with a level difference between the two. Beginning in 1992, with recovery from the recession, this level difference disappears as unemployment falls faster in Michigan than in the comparison states. Between Michigan and only Indiana, Ohio, and Wisconsin, however, the level difference in the unemployment rate remains until about 1994. The same pattern hold among high school drop–outs, though

[20]Illinois and Minnesota are not included in the group of comparison states because of several large changes to their General Assistance programs in the early 1990's. Wisconsin began numerous AFDC demonstration projects as early as 1987, but did not implement a widespread reform (the so–called "Wisconsin Works" plan) to move people off welfare and into employment until 1996. Wiseman (1996) documents the welfare policy initiatives in Wisconsin.

[21]The results are not significantly different when only Indiana, Ohio, and Wisconsin are used as comparison states. See Table (11) and the discussion on page 24.

[22]These data are from the March CPS and reflect individuals' labor force status in that month.

the unemployment rate among Michigan and all of the comparison states begin to converge in 1992. Changes in the economy of Michigan other than the elimination of GA benefits seem to have taken place. The identification procedure in section (5) controls for these differences in labor demand across states, and across skill groups within states.

Because the effects on the Michigan labor market from the elimination of General Assistance are likely to affect a small portion of the population, there is a premium to having a large sample in order to obtain as precise estimates as possible. Thus unlike most studies that use the Current Population Survey, the empirical work that follows utilizes data from all eight interviews in which respondents participate.[23]

The sample consists of civilians aged 16 to 54. The self–employed, individuals with hourly earnings below $2 per hour (1995$), and those with missing data on hours of work, are dropped from the sample. Table (4) presents sample statistics for the variables used in the analysis, broken down by whether the person resided in Michigan and whether they were interviewed prior to October, 1991. The top panel of the table indicates there are few differences in the covariates between people in Michigan and those in the comparison states.[24] The proportion of nonwhites is slightly higher in Michigan; the proportion of the population with a college degree or more education is slightly lower. Although the influence of these covariates are controlled for in the model, had they differed substantially between Michigan and the comparison states it may signal that the latter is not a good indicator for how the economy of Michigan would have evolved in the absence of welfare reform.

In constructing the dependent variables, a person is employed if they worked for a wage any time during the previous week. Labor force participation is defined as someone who is either working or looking for work (unemployed). Two measures of hours of work are examined: hours worked last week among workers, and among all people. The former is a measure of the extent of part–time versus full–time work; the latter is a measure of total work effort, which includes transitions into and out of employment. Finally, respondents are asked about their weekly earnings. From this, hourly earnings is calculated as the ratio

[23]Since questions about earnings are only asked in two of the eight interviews, estimates of changes in earnings are based on a smaller sample.

[24]The difference in educational attainment between the two time periods are due to changes in the CPS questionnaire in 1992.

of weekly earnings to the number of hours the respondent worked last week. Both wage measures are deflated to 1995 dollars. In the empirical work below, the log, rather than the level, of weekly and hourly earnings is used.

In Michigan the employment–to–population ratio increases after the reform by one percentage point, from 71.1% to 72.1%. In the control states employment fell by 1.2 percentage points, from 73.3% to 72.1% of the population, after October, 1991. If in the absence of welfare reform in Michigan the employment rate would have dropped by 1.2 percentage points as well, a simple estimate of the effect of the reform on employment is that it led to a 2.2 (= 1.0 - (-1.2)) percentage point point increase in employment in Michigan. Similar calculations indicate that the unemployment rate was 1.3 percentage points higher, and hourly earnings were $0.39 lower in Michigan than they otherwise would have been. However, these are not credible estimates of the effect of the elimination of the GA program since there were likely to have been other differences between the labor market in Michigan and in the comparison states. In particular, there may have been differences due to the business cycle or other unobservable conditions.

5 Econometric Specification

The effect of the elimination of General Assistance on labor markets in Michigan is identified by comparing the changes between in wages, employment, unemployment, labor force participation, and hours of work in Michigan with changes in the eleven comparison states that did not reform their General Assistance program. The period from January 1989 through September 1991 is the base time period before the elimination of the GA program in Michigan. The period after the reform is October 1991 though December 1993. A window of about two and a half years before and after program was eliminated allows the labor market outcomes to estimated quite precisely, yet also balances the risk that with a longer time frame many more factors other than the elimination of the GA program would surely influence those outcomes.

Since economic conditions are likely to have differed in Michigan and the comparison states, an important feature of the identification method is that the changes in outcomes in

Michigan are estimated conditional on the demand for labor of people of different observable skill groups, based on their age, education, and gender. These characteristics are meant to group together people who are likely to be affected similarly by economic shocks. The age groups are sixteen to twenty–nine, thirty to thirty–nine, and forty or older. The education groups are those without a high school degree, those with high school degree only, and those with any post–high school education. With gender, these form eighteen distinct groups.

The outcome of person i, in group j, state s, at time t, is modeled as

$$y_{ijst} = x_{ijst}\lambda + d_{jst} + \epsilon_{ijst} \tag{4}$$

where x_{ijst} is a set of individual characteristics that are correlated with economic outcomes; d_{jst} represents a set of group–state–time fixed effects that capture the average outcome of people in group j, state s, at time t; and ϵ_{ijst} is an unobservable term that reflects individual attributes that influence economic outcomes. Since the skill groups already break the sample into education, age, and gender cells, the covariates, x_{ijst}, include a spline in age and its square within each of the three age ranges, as well as indicators for people who have a college degree and those with any post–graduate education. Also included are indicators for people who are married, nonwhite, both married and nonwhite, and for those who live in a central–city area.[25] An ordinary least squares regression of equation (4) produces estimated average outcomes, $\hat{d}_{jst}$, among people in each skill group–state–time cell, conditional on the individual covariates.

The effect of increased labor market participation by former General Assistance recipients is measured by changes in the average outcomes of groups in Michigan after October, 1991. Thus $\hat{d}_{jst}$ is modeled as

$$\hat{d}_{jst} = c_j + \tau_t + \alpha_{js} + \beta_{jt} + \delta_{jst} + \gamma_{js}\mathrm{U}_{st} + \xi_{jst} \tag{5}$$

where c_j is a skill group effect, and τ_t is a time fixed effect that reflects trends in outcomes among all people, as well as sample design differences in the CPS from year to year. α_{js} is

[25] That is, with the subscripts suppressed, the covariates are specified as $x\lambda = age_1\lambda_1 + age_1^2\lambda_2 + age_2\lambda_3 + age_2^2\lambda_4 + age_3\lambda_5 + age_3^2\lambda_6 + (\text{College degree})\lambda_7 + (\text{Post–grad ed.})\lambda_8 + (\text{Married})\lambda_9 + (\text{Nonwhite})\lambda_{10} + (\text{Married}\times\text{Nonwhite})\lambda_{11} + (\text{City})\lambda_{12}$, where age_1 is equal to the difference between the individual's age and the mean age among people less than thirty, if the individual is less than thirty, and zero otherwise. Similarly for age_2 and age_3 for those aged thirty to thirty–nine and those forty to fifty–four.

a state and skill group effect, β_{jt} is a time and skill group effect, and δ_{jst} is the treatment effect. U_{st} is the unemployment rate among men in state s at time t, which captures business cycle influences on group outcomes. People in different skill groups and states vary in their responsiveness to changes in the overall unemployment rate, which is captured by the loading factor γ_{js}. Finally, ξ_{jst} is an error term that represents unobservable influences on average economic outcomes, as well as sampling error in the estimation of the cell means.

The treatment effect in equation (5) is implemented as an indicator for skill groups comprised of people who lived in Michigan after October, 1991, when the General Assistance program was eliminated. Since α_{js} captures permanent differences in the level of outcomes between each group in Michigan and the corresponding group in the comparison states, and β_{jt} captures changes in outcomes of each group across both Michigan and the comparison states, the treatment effect measures how much average outcomes for groups in Michigan differed after the elimination of the GA program from what they would have been had their change been the same as those groups in the comparison states, controlling for differences in labor market effects, $\gamma_{js}U_{st}$.

If there are no other shocks to the labor market in Michigan after October, 1991, other than those captured by $\gamma_{js}U_{st}$, then the OLS estimate of δ_{jst} in equation (5) is an unbiased estimate of the effect of the elimination of the GA program on labor market outcomes. Put differently, the unobserved influences on economic outcomes, captured by the error term, ξ_{jst}, must be uncorrelated with δ_{jst}.[26] Particularly because the unemployment rate in the states may not capture all differences in labor market conditions between Michigan and the control state, this assumption may be overly restrictive. Three less restrictive assumptions about the error term give rise to alternative, unbiased estimates of the treatment effect.

One generalization is to model the unobservable term as having a component that affects all groups in a state at a particular time (θ_{st}), as well as a random component unique to each group–state–time cell (η_{jst}). A common effect could be brought about by changes in the price

[26]In addition, it must assumed the state policy to eliminate the GA program was not itself related to changes in labor market outcomes in Michigan, and that savings in the state budget were not put back in the economy in a way that would effect labor markets. This highlights that, of course, this change in welfare policy is not a classical controlled experiment. Ideally one would want many observations of such instances of large changes in policies, in which case unobservable factors would "average out" across observations.

of goods produced by low–skilled labor or in taxes and spending by the state government. The error term is thus given by

$$\xi_{jst} = \theta_{st} + \eta_{jst} \tag{6}$$

Because of the large number of better educated people in the Michigan, and the fact that former GA recipients would have likely taken very low–skilled jobs, it is reasonable to assume that only the average outcomes of people without a high school degree would be affected by GA reform. Thus the effect on workers without a high school degree can be estimated as the difference in average outcomes among the lowest educated group and those with more education, relative to this difference among people in the comparison states. The difference in outcomes among better educated people in Michigan and the comparison states is thus a measure of the common state–time effect, θ_{st}.

To implement this difference estimator, define e_j to be an indicator that group j is composed of people without a high school degree. Interactions between e_j and α_{js}, β_{jt}, and δ_{jst} are included in equation (5):

$$\hat{d}_{jst} = c_j + \tau_t + \alpha_{js} + \beta_{jt} + \delta_{jst} + e_j(\alpha_{js} + \beta_{jt} + \delta_{jst}) + \gamma_{js}\mathrm{U}_{st} + \xi_{jst} \tag{7}$$

where $e_j\alpha_{js}$, $e_j\beta_{jt}$, and $e_j\delta_{jst}$ capture the differential effects among people without a high school degree. The treatment effect is now the term $e_j\delta_{jst}$, which measures the change in labor market outcomes among the least educated groups relative to the change among better educated people in Michigan, relative to this difference in the comparison states. In the empirical implementation of this specification, groups composed of people with some college education are dropped from the model and the treatment effect is estimated as the difference in outcomes between high school drop–outs and people with only a high school degree.[27]

An alternative to the assumption that the unobservable shock θ_{st} in equation (6) affects all groups in the state uniformly is to assume groups are affected by the observable business cycle shocks and the unobservable shocks to the same degree. That is, if $\xi_{jst} = \gamma_{js}\theta_{st} + \eta_{jst}$,

[27]People with some post–high school education are dropped since their labor market may be quite distinct from that of lower educated people and subject to additional shocks.

then equation (5) can be rearranged to give

$$\begin{aligned} \hat{d}_{jst} &= c_j + \tau_t + \alpha_{js} + \beta_{jt} + \delta_{jst} + \gamma_{js}(\mathrm{U}_{st} + \theta_{st}) + \eta_{jst} \\ &= c_j + \tau_t + \alpha_{js} + \beta_{jt} + \delta_{jst} + \gamma_{js}(\tilde{\theta}_{st}) + \eta_{jst} \end{aligned} \tag{8}$$

Here the combined shock to each group at time t in state s is given by the product $\gamma_{js}(\tilde{\theta}_{st})$. Since both γ_{js} and $\tilde{\theta}_{st}$ are unobserved the equation is nonlinear in the parameters, and nonlinear least squares must be used.[28]

Finally, the two previous cases can be combined to allow for a common unobserved shock to all groups in each state at a particular time (κ_{st}), as well as a shock that affects each group by the factor γ_{js}. That is, the unobservables are modeled as

$$\xi_{jst} = \gamma_{js}\theta_{st} + \kappa_{st} + \eta_{jst} \tag{9}$$

The treatment effect is estimated by comparing the change in outcomes of the least educated group relative to those with a high school degree, as in equation (7). When ξ_{jst} is substituted into equation (7), the model becomes nonlinear in the parameters.

An important assumption of these models is that the relative demand for people of different skill groups within a state is constant over time (γ_{js} does not vary over time). This assumption may seem problematic given the well–known decrease in demand for less–skilled labor over the past two decades.[29] If these do not affect Michigan differently than the comparison states, the group–time effects (β_{jt}) will control for the effect of these changes on the outcome variables. Further, since the estimates below are derived from a five–year time period, any long–term trends specific to Michigan should have only a modest effect on the results.

A number of simplifications are made to the model in equation (5). Rather than represent all eighteen skill groups, the terms c_j, α_{js}, β_{jt}, and δ_{jst} differ only by the three education classes (less than a high school degree, only a high school degree, or some college education).[30]

[28]The nonlinear model is identified by normalizing the the average labor market shock ($\tilde{\theta}_{st}$) in each state over the period to equal one; the initial value of the labor market shock in each state to equal one; and the factor loading (γ_{js}) on one of the groups in each state to equal one. Where alternative normalizations give different results, the model with the best fit was chosen.

[29]See, for example, Katz and Murphy (1992).

[30]That is, α_{js}, for example, is implemented as a dummy variable for each combination of the three education groups and whether the person resided in Michigan or the comparison states.

In some specifications the treatment effect is allowed to differ by education and gender. In addition, people who live in the comparison states are treated as if they live in one state, rather than separately identifying each individual state. Finally, the observations are grouped quarterly, rather than monthly, to guard against small cell sizes. With two states, eighteen skill groups, and twenty quarters of data, there are 720 cell means ($\hat{d}_{jst}$).

Finally, use of the quarterly unemployment rate of all men as a proxy for local labor demand raises the issue of the so–called reflection problem. The overall unemployment rate in the state reflects all changes in the local labor market, and in particular any effect from the elimination of the GA program in Michigan. The inclusion of it in the model, therefore, may absorb some of the true variation in labor market outcomes caused by welfare reform. Therefore, a second measure of the local demand for labor that is used is the unemployment rate among college educated men. The labor market for higher educated and better–skilled individuals would have been affected to a much smaller degree by increased labor market participation among very low–skilled individuals. While this measure is arguably unaffected by welfare reform, it may, however, track changes in the demand for low–skilled labor rather poorly. In addition, because of the smaller number of college–educated men in the data, their unemployment rate are measured with less precision.

5.1 Estimating standard errors

The state–quarter–group observations in the linear and nonlinear regressions given in the previous section are weighted by their relative sample size. The standard errors of the estimates are then computed in a second step using a bootstrap estimate of the full variance–covariance matrix of the cell means (the $\hat{d}_{jst}$'s). The following makes this procedure precise for the linear regression case: let Z be the (N $\times$ K) matrix of explanatory variables in equation (5) and denote as $\hat{D}$ the (N $\times$ 1) column vector of the economic outcome under consideration. Equation (5) can then be represented as

$$\hat{D} = Z\Pi + \xi \tag{10}$$

where Π is the parameter vector and ξ is vector of error terms. G is the weight matrix, an (N $\times$ N) diagonal matrix where the nth diagonal element is the ratio of the number of people in

nth skill group–state–quarter cell to the total number of people in the sample. The weighted least squares estimate of Π is then given by

$$\hat{\Pi} = (Z'GZ)^{-1}Z'G\hat{D} \tag{11}$$

If there is no specification error in equation (10), and the only source of error derives from sampling error in the estimation of the cell means, then the variance–covariance matrix of the cell means can be used to compute the standard errors of the parameter estimates. Let $\hat{\Sigma}$ be an estimate of the variance–covariance matrix of D; then the variance matrix of $\hat{\Pi}$ is given by

$$\text{var}(\hat{\Pi}) = (Z'GZ)^{-1}Z'G\hat{\Sigma}GZ(Z'GZ)^{-1} \tag{12}$$

Note this is not equal to the variance matrix computed with the weighted least squares formula since Σ does not equal G^{-1}.[31] For the nonlinear least squares models, the matrix Z in equation (12) is replaced by the matrix of derivatives of the regression equation (8).

Because of the unique design features of the Current Population Survey, an estimate of the variance–covariance matrix of the cell means obtained from the vector of residuals from an OLS estimate of equation (4) is biased. Each individual is observed in the data up to eight times, thus there is likely to be serial correlation in the unobservable component in equation (4). Furthermore, the CPS is a household–level survey. Households are randomly selected, and all members of the household participate in the survey. Thus, to the extent that individuals within the household jointly determine their employment and hours of work, the unobservable component will be correlated among members of the same household.[32]

The bootstrap method is used to obtain an unbiased estimate of the variance matrix of the cell means. To mimic the randomization in the CPS sample design, households are drawn with replacement from the set of all households appearing in the data at any time. For each

[31] If there is specification error in equation (10), as well as sampling error in the cell means, computation of the correct variance of $\hat{\Pi}$ is more complicated and requires additional assumptions about the correlation between the sampling error and the specification error, as well as the correlation in the sampling errors of different cells. See, for example, Chamberlain (1994). When equation (10) is estimated on the individual–level data, rather than the cell means, bootstrapped standard errors are very close to those computed with equation (12), which suggests specification error is not a problem. Those estimates are available upon request.

[32] Assortive mating that is correlated with unobserved skills will have a similar effect on the correlation of unobservable determinants of wages.

household chosen, all observations associated with that household at any time are included in the dataset. This randomization procedure is replicated fifty times, producing fifty different "random samples" of data, upon which equation (4) is estimated. The empirical covariance matrix of the fifty sets of cell means is an unbiased estimate of the true variance matrix.[33]

6 Regression Results

Tables (5) through (10) present estimation results for the five outcome variables: employment, labor force participation, weekly hours among workers, weekly hours among all people, and hourly and weekly earnings. Only the estimated change in outcomes are displayed.[34] The tables are organized as follows: The rows of the table represent four specifications. The first specification, in the first three rows of each table, measures the treatment effect on each of three education groups by comparing people in Michigan with people of the same educational attainment in the comparison states. The second specification measures the treatment effect as the change in outcomes among the least educated in each state relative to the change among people in their state with a high school degree. The third specification, in the fifth and sixth rows, compares people in Michigan and the comparison states by education and gender, but constrains the effect on people with a high school degree or more education to be zero. Because of this restriction, the third specification is not strictly a generalization of the first specification (though for most models the restrictions cannot be rejected). Finally, the fourth specification, in the last two rows of the tables, is a generalization of the second specification. Here the treatment effect is stratified by gender, and computed as the change

[33]Given an unbiased estimate of the variance–covariance matrix, it could be used directly as a weight matrix an a generalized least squares estimate of equation (10). However, unless the number of bootstrap replications in the construction of the variance matrix is at least as large as the number of observations (the seven hundred twenty cell means), the variance matrix is not invertible and therefore cannot be used in such a procedure. To see this, let $c(r)$ be a column vector of the deviation of the coefficients from the rth bootstrap replication from the mean of the fifty coefficients. If there are R bootstrap replications, the bootstrap estimate of the variance–covariance matrix is given by $V = (1/R)\sum_r c(r) * c(r)'$. The rank of $c(r)$ is one, and thus the rank of $c(r) * c(r)'$ is one. Since V is is the sum of R matricies each with a rank of one, the rank of V is at most R, and thus not invertible if there less bootstrap replications than the number of cell means.

Even if the estimated variance matrix was invertible, any sampling error in the variance of the cell means is correlated with sampling error in the estimated variance matrix. Altonji and Segal (1996) show that this leads to a small sample bias when the inverse of the variance matrix is used as a weight in a GMM procedure.

[34]The full set of coefficient estimates as well as other regression statistics are available from the author.

among the least educated group relative to people with a high school degree.

Different specifications are also presented in the three columns of each table. The first and second columns are the linear regression models given by equations (5) and (7) (the specification in the first three rows and in the fifth and sixth rows are based on equation (5); those in the fourth and seventh and eighth rows are based on equation (7)). The models in the first column use the unemployment rate of all men to control for business–cycle effects, while models in the second column use the unemployment rate of college–educated men. The third column implements the nonlinear regression models given by equation (8), and with the error specified as in equation (9).

Note that since about half of the GA recipients in Michigan had a high school degree, the estimated increase in employment and labor market participation among high school drop–outs does not estimate the the total increase in these outcomes due to the elimination of the GA program. However, since it is likely that nearly all former GA recipients will enter the very low–skilled end of the labor market, the total effect of their increased participation will be more accurately measured by changes in the hours of work and earnings of high school drop–outs in Michigan.

In the specification in the first column of Table (5), employment is estimated to have increased by 0.9 percentage points among high school drop–outs in Michigan, compared to the change in employment among high school drop–outs in the comparison states. There is virtually no estimated change in employment among better educated groups in Michigan. The estimates in the second and third column, however, show an increase in employment among the least educated group of 2.6 and 2.4 percentage points. This indicates that the overall unemployment rate for men, which was used in the specification presented in the first column, may absorb some of the true variation in labor market outcomes that resulted from the elimination of the GA program.

The third and fourth specifications, in the fifth through eighth rows of Table (5), present the estimated increase in employment of male and female high school drop–outs. In the third specification residents of Michigan are compared directly to people in the comparison states, and the treatment effect on people with a high school degree or more education is constrained to be zero. The fourth specification reports results where the change among high

school drop–outs in Michigan relative to the change among people with a high school degree is compared to the relative change in the comparison states. Relative to the change among people with a high school degree, the increase among women ranges from 1.4 percentage points (column two) to 3.4 percentage points (column three). The increase in employment among men is smaller, ranging from 0.1 to 1.7 percentage points.

To relate the employment changes to the size of the GA population, the net increase in employment among people without a high school degree ranged from 0.9 to 2.6 percent of 500,000 people, which corresponds to 4500 to 13,000 people. About half of the 80,000 former GA recipients did not have a high school degree. If all of the net increase in employment among high school drop–outs came from this pool of 40,000 workers, then a back–of–the–envelope estimate is that 11.25 ($= 4500/40,000$) to 32.5 percent of the GA population without a high school degree found a job once the program was eliminated.[35] This can be thought of as a lower bound on the labor supply response among former GA recipients, since some entrants to the labor market may have displaced employment of others.

The estimates in Table (6) indicate that the increased employment was driven largely by increased labor force participation, though most of the parameters are estimated quite imprecisely. As in the models of employment, the estimated increases in labor force participation are largest when the unemployment rate for college–educated men is used to control for business cycle effects (column two), and when the labor market shocks are are allowed to vary by skill group (column three). In the latter specification, participation by high school drop–outs increased by 2.3 percentage points relative to people with a high school degree. The estimates in the last two rows of the table indicate this was driven by a 1.2 percentage point increase among men and a 4.4 percentage point increase among women.

The estimated change in hours of work among workers, in Table (7), indicate that hours of work fell among the least educated group, particular among men. Since hours also fell among better educated groups, the most credible estimates of the effect of the elimination

[35]This calculation assumes that none of the former GA recipients were already employed when the program was eliminated. Table (2) indicates that about twenty percent of people on public assistance during the previous year were employed during the following March interview. If the pool of former GA recipients who could enter the labor market once benefits were eliminated was thirty–two thousand (eighty percent of forty thousand), then the 0.9 to 2.6 percentage point increase in employment corresponds to 14.1 to 40.6 percent of the GA recipients without a high school degree.

of the GA program are those based the change among the least educated group relative to people with a high school degree. In the second specification (row four of the table), the point estimates range from a decrease of 0.4 to 0.9 hours per week (or 1.2 to 2.7 percent of their average of 33 hours per week). The fourth specification (in the last two rows of the table) indicates that all of the average decrease among the least educated group was accounted for by a decrease among male workers. The most robust specification, reported in the third column, indicates hours among men decreased by nearly 1.3 hours per week after the elimination of the GA program.

Changes in weekly hours of work among both workers and nonworkers are reported in Table (8). Since there were changes in total hours worked among better educated groups in Michigan, the change in hours among the least educated group relative to better educated groups is the most appropriate measure of the effects of welfare reform. The point estimates in the second specification (the fourth row of the table) range from no change to an increase of 0.4 hours per week; however these are all smaller than their standard error. The point estimates in the last specification (in the last two rows of the table) are also smaller than their standard errors, but suggest that for the least educated women there may have been a small increase in total hours of work.

Changes in average hourly earnings are reported in Table (9). While wages did not change among the least educated as a whole, the results in specifications three and four (in the last four rows of the table) suggest differences among earnings for men and women. The most robust results, in the fourth specification, column three, indicate that earnings among men may have actually increased by 1.5 percent, while earnings among women declined by 5.8 percent. However, the standard errors on these estimates are quite large, and thus the null hypothesis of no change in hourly earnings cannot be rejected.[36]

Changes in weekly earnings, reported in Table (10), reflect changes in hourly earnings and weekly hours, as well as changes in the composition of the labor force. Working male high school drop–outs decreased their hours at work, though may have experienced a slight increase in their rate of hourly pay, which resulted in a decrease in weekly earnings. The

[36]Recall that earnings data is only collected in the fourth and eighth interview, which accounts for the larger standard errors in Tables (9) and (10).

point estimates range from a decrease of 2.2 percent (specification four, column two) to 8.6 percent (specification four, column three). Women did not experience significant changes in their hours of work, though their average hourly earnings did fall, which lead to a small decreases in their weekly earnings. The point estimates range from a decline of 1.4 to 3.8 percent. Again, however, the standard errors are quite large, and in most cases the null hypothesis that there was not a change in weekly earnings cannot be rejected.

Finally, Table (11) presents sensitivity analysis for some of the key point estimates where only Indiana, Ohio, and Wisconsin are used as comparison states. As discussed above, these states are the geographically closest to Michigan, and like Michigan have a large share of their workforce in the durable manufacturing sector. The estimated change in employment rates and hourly earnings using only these three comparison states are not significantly different from the main estimates based on the full group of comparison states.[37] The first and third columns of the table are the linear regression models that use the unemployment rate among all men to control for business cycle effects (and are thus comparable to the first column in Tables (5) and (9)); the second and fourth columns are the nonlinear regression models (and are comparable to the third column in Tables (5) and (9)). Most of the point estimates based on the smaller group of comparison states are within one standard deviation of the point estimates from the main estimates (Indeed, most of the differences are less than a few tenths of a percentage point). This provides strong evidence that the main estimates in Tables (5) through (10) are not driven by idiosyncratic changes in the labor markets of a particular comparison state, or group of states.

Taken together, the results suggest that increased labor market participation by former GA recipients in Michigan led to different labor market adjustments among men and women. Among men, wages remained constant and hours among working men decreased by about 1.3 hours per week. For women, on the other hand, hourly earnings adjusted downward by as much as six percent, and there is no evidence of a decrease in hours among working women.[38]

[37]The other outcome variables are also not significantly different when this restricted set of comparison states are used. Those results are not presented for considerations of space.

[38]One caveat to note is that as former GA recipients entered the labor market, there would have been compositional changes in the labor force which will affect average outcomes. For example, if new entrants to the labor market tend to work fewer hours than existing workers, the estimated average hours among workers will fall even if hours of work among existing workers do not change. Reasonable earnings and hours

The elasticity of demand for low–educated men may be quite inelastic, while that for women is more elastic. Based on the discussion in Section (3), this suggests that increased labor market participation among former GA recipients would not have displaced the employment of men, though it may have done so for low–educated women.

7 Conclusion

Welfare reform has been claimed as one of the great political achievements of the 1990's. Recipients are required to work, and are limited to two consecutive years or five years in the lifetime of benefit receipt. State governments must meet strict targets for moving welfare recipients into the workforce, and were given increased flexibility in the design of programs. The criteria for evaluating such a large change in policy must include the degree to which self–sufficiency has been promoted among the at–risk welfare population, the decline or advancement in material health and well–being among that population, as well as the "transition" costs of the reform. In particular, it is important to understand how increased labor force participation among former recipients will impact the labor market for very low–skilled workers.

This study takes a first step in that direction by evaluating how local labor markets in Michigan were affected when General Assistance, a sizable program for low–income people who do not qualify for federal assistance, was eliminated in 1991. The results suggest that increased labor force participation among former GA recipients led to increases in employment among high school drop–outs of 0.9 to 2.6 percentage points, relative to changes in the employment of people with a high school degree. Larger employment gains were made by women. Among women, increased employment did not translate into changes in weekly hours of work, but did lead to a decline in hourly earnings on the order of 3.7 to 5.8 percent. Weekly hours among working men did fall, however, by about 1.3 hours per week, with little evidence of a systematic effect on hourly earnings. These results suggest that employment displacement in Michigan may have been more prevalent among low–educated women, though not among men.

projections for new entrants, however, could not account for the magnitude of the effects found here.

There are two important considerations for transferring these results into lessons for AFDC reform: What is the likely labor supply response among single mothers with children, the group most affected by the reform of the federal welfare system? Are the elasticities of labor demand for such people likely to be different than that for GA recipients in Michigan?

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Table 1: Characteristics of Public Assistance Recipients and the Overall Population, 1989–1991

	Michigan		Control States	
	Public Assistance	Overall	Public Assistance	Overall
Women	50.3%	50.0%	62.6%	51.2%
Nonwhite	44.8	15.6	48.5	16.0
Married	15.8	51.6	21.8	53.7
No HS degree	48.1	18.6	45.8	18.0
HS degree	32.4	38.6	38.8	39.6
College	19.4	42.8	15.3	42.4
MSA resident	82.0	83.1	80.9	76.9
Large MSA resident	47.9	50.1	48.0	29.1
Employed	23.6	70.0	19.7	72.9
Unemployed	53.0	10.2	42.8	7.3
Not in labor force	49.9	22.1	65.6	21.4
Average weekly wage (1995$)				
Among workers	$191.32	$548.98	$230.57	$556.45
Among all people	69.40	426.88	72.45	437.26
Age	35.0	33.7	33.9	33.9
CPS sample size	154	10,397	890	78,444
Annual population estimate	81,269	5,143,867	447,195	43,887,789

Source: Author's tabulation of March Current Population Survey, respondents aged 16 to 54.

Notes: Observations are weighted using March Supplement weights. Large MSA's include Boston, Nassau–Suffolk counties, New York City, Newark, Pittsburgh, Philadelphia, and Detroit. The public assistance group includes all people who reported receiving any income from a cash assistance program other than AFDC during the previous calendar year. All other variables refer to the respondent's status during the week prior to the interview. Unemployment refers to people who are in the labor market, but not currently employed.

Table 2: Characteristics of Public Assistance Recipients, 1979–1996

	1979-1988		1989–1991		1992-1993		1994–1996	
	Control	Michigan	Control	Michigan	Control	Michigan	Control	Michigan
CPS sample size	2658	477	890	154	609	42	820	37
Annual population estimate	454,026	82,328	447,195	81,269	501,058	36,454	549,708	24,666
	(9705)	(3921)	(16,122)	(6738)	(22,270)	(7528)	(21,143)	(4365)
Woman	57.6	40.7	62.6	50.3	64.3	55.5	68.8	68.2
Nonwhite	44.5	47.2	48.5	44.8	44.8	51.5	51.9	40.4
Married	24.6	21.2	21.8	15.8	21.1	15.8	19.5	33.6
Any children	46.0	27.0	49.0	26.9	48.5	38.6	50.5	46.2
No HS degree	51.1	43.1	45.8	48.1	39.8	32	40.2	29
HS degree	37.8	42.4	38.8	32.4	41.1	30.9	38.1	27.7
College degree	11.2	14.5	15.4	19.5	19.1	37.1	21.7	43.3
MSA resident	66.5	65.9	80.9	82.0	78.8	72.2	82.1	97.8
Large MSA resident	42.9	57.7	48.0	47.9	45.3	32.8	47.6	51.2
Age	33.4	33.5	33.9	35	35.2	37.1	34	36.4
Employed	20.7	18.8	19.7	23.6	22.2	30.2	24.9	34.7
Unemployed	47.1	67.1	42.8	53.0	39.9	12.2	32.9	10.2
Not in labor force	60.8	43.0	65.6	49.9	63	65.6	62.9	61.4
Weekly earnings (1995$)								
Among workers	$258.4	$277.6	$230.57	$191.32	$245.52	$252.05	$402.4	$243.22
Among all people	84.15	100.75	72.45	69.4	78.37	144.84	155.69	87.4
Public Assistance	1.1	1.6	1.0	1.6	1.1	0.7	0.9	0.3
AFDC	2.8	4.6	2.7	4.4	3.0	4.0	2.2	3.0

Source: Author's tabulation of March Current Population Survey, respondents aged 16 to 54.

Note: Top panel are means among people reporting income from non-AFDC public assistance during the previous calendar year. Bottom panel are means among all persons. All demographic and labor market variables refer to the respondent's status the week prior to the interview. Standard errors for annual population estimates are given in parentheses. Observations are weighted by the March Supplement weights. Large MSA's include Boston, Nassau-Suffolk counties, New York City, Newark, Pittsburgh, Philadelphia, and Detroit. Unemployed refers to people who are in the labor market, but not currently employed.

Table 3: Labor Force Characteristics for Michigan and the Comparison States, 1989–1991

	Percent of sample	Manufacturing		Services	Trade	Other	No HS degree	HS or less
		Durable	Non–durable					
Indiana	3.3	20.2	5.7	28.0	26.2	20.0	15.6	64.1
Massachusetts	11.0	12.1	6.7	36.6	27.1	17.6	13.2	47.3
Missouri	3.1	10.4	8.1	30.6	28.9	22.1	15.1	59.0
New Hampshire	2.4	19.3	5.5	29.4	27.8	17.9	13.2	51.1
New Jersey	11.9	7.8	9.8	32.4	28.4	21.6	12.1	51.8
New York	19.2	8.5	6.5	36.3	28.0	20.8	13.6	51.2
Ohio	12.9	15.7	8.2	30.7	26.8	18.8	13.9	59.1
Pennsylvania	12.1	11.6	9.0	32.7	26.8	19.9	11.7	61.0
Virginia	4.3	7.8	7.1	32.2	25.7	27.1	15.6	52.3
West Virginia	3.5	7.4	7.0	29.5	26.4	29.8	15.4	66.7
Wisconsin	4.0	15.0	10.1	30.6	26.0	18.4	11.7	58.2
All comparison states	87.7	11.7	7.8	32.7	27.2	20.7	13.4	55.8
Michigan	12.3	19.5	6.3	30.6	27.2	16.4	14.1	56.7

Source: Author's tabulation of March Current Population Survey, respondents aged 16 to 54 who report being employed or looking for work in the week prior to the interview. The percent of the sample from each state is calculated from the CPS monthly data from 1989 to 1993, described later in the text, and refers to people both in and out of the labor force.

Note: The industry category "Trade" includes wholesale and retail trade; and finance, insurance, and real estate. "Other" includes agriculture, mining, construction, transportation, communications, utilities, forestry and fisheries, public administration, and the armed forces. All observations are weighted by the CPS weights (column 1) or the March Supplement weights (columns 2 through 8). Averages among all comparison states are weighted by the size of the appropriate sample population.

Table 4: Descriptive Statistics of Regression Sample

Variable	Pre–Reform		Post–reform	
	Michigan	Control states	Michigan	Control states
Age	33.2	33.3	33.7	33.8
	(10.5)	(10.5)	(10.5)	(10.5)
Woman	0.515	0.526	0.515	0.527
Nonwhite	0.169	0.145	0.169	0.151
Nonwhite woman	0.092	0.079	0.093	0.083
Married	0.518	0.529	0.510	0.523
Central city	0.216	0.270	0.209	0.266
No HS degree	0.185	0.183	0.163	0.169
HS degree only	0.416	0.411	0.350	0.373
Some college	0.231	0.198	0.307	0.245
College degree	0.101	0.128	0.119	0.144
More than college	0.067	0.080	0.061	0.069
College educ. male	2.16%	2.60%	2.61%	3.53%
unemployment rate	(0.58)	(1.07)	(0.44)	(1.31)
Employed	0.711	0.733	0.721	0.721
Unemployed	0.078	0.056	0.080	0.071
Not in Labor force	0.229	0.223	0.217	0.224
Hours per week				
Among workers	38.7	39.0	38.63	38.74
	(13.3)	(12.5)	(13.50)	(12.7)
Among all people	26.0	27.1	26.49	26.6
	(21.2)	(20.8)	(21.1)	(20.8)
Avg. weekly earnings	$512.57	$513.39	$511.77	$508.63
	(366.00)	(359.31)	(367.44)	(357.72)
Avg. hourly earnings	$13.54	$13.41	$13.24	$13.50
	(16.81)	(13.58)	(11.00)	(18.23)
Sample size	106,435	750,299	85,802	616,498

Source: Author's tabulation of Current Population Survey. Standard errors in parentheses.

Table 5: Employment

Specification		Unemployment Rate All men	College ed.	Nonlinear L.S.
(1)	Michigan relative to the comparison states:			
	Less than high school	0.009	0.026	0.024
		(0.011)	(0.011)	(0.009)
	High school	-0.000	0.014	0.001
		(0.006)	(0.006)	(0.006)
	Some college	-0.003	0.008	0.005
		(0.005)	(0.006)	(0.006)
(2)	Less than high school relative to high school	0.009	0.012	0.026
		(0.013)	(0.012)	(0.012)
	Less than high school, by gender			
(3)	Men	-0.001	0.024	-0.003
		(0.014)	(0.014)	(0.014)
	Women	0.020	0.026	0.027
		(0.016)	(0.015)	(0.016)
	Less than high school relative to high school, by gender			
(4)	Men	0.001	0.011	0.017
		(0.016)	(0.016)	(0.016)
	Women	0.019	0.014	0.034
		(0.018)	(0.017)	(0.016)

Note: Sample size equals 720 in specifications (1) and (3), and 480 in specifications (2) and (4).

Table 6: Labor Market Participation

Specification		Unemployment Rate All men	Unemployment Rate College ed.	Nonlinear L.S.
(1)	Less than high school	0.008	0.020	0.019
		(0.011)	(0.011)	(0.009)
	High school	0.006	0.012	0.007
		(0.006)	(0.006)	(0.006)
	Some college	-0.006	0.002	-0.001
		(0.005)	(0.006)	(0.005)
(2)	Less than high school relative to high school	0.002	0.008	0.023
		(0.012)	(0.011)	(0.012)
	Less than high school, by gender			
(3)	Men	-0.007	0.010	-0.011
		(0.015)	(0.014)	(0.014)
	Women	0.025	0.029	0.032
		(0.016)	(0.015)	(0.016)
	Less than high school relative to high school, by gender			
(4)	Men	-0.012	0.002	0.012
		(0.016)	(0.015)	(0.015)
	Women	0.019	0.017	0.044
		(0.018)	(0.016)	(0.033)

Note: Sample size equals 720 in specifications (1) and (3), and 480 in specifications (2) and (4).

Table 7: Weekly Hours of Work Among Workers

Specification		Unemployment Rate: All men	Unemployment Rate: College ed.	Nonlinear L.S.
(1)	Less than high school	-1.364	-0.624	-1.045
		(0.354)	(0.345)	(0.234)
	High school	-0.472	-0.202	-0.149
		(0.192)	(0.193)	(0.169)
	Some college	0.144	0.299	0.201
		(0.163)	(0.182)	(0.157)
(2)	Less than high school relative to high school	-0.892	-0.419	-0.396
		(0.378)	(0.371)	(0.371)
	Less than high school, by gender			
(3)	Men	-1.924	-1.236	-1.433
		(0.422)	(0.420)	(0.429)
	Women	-0.451	0.286	0.043
		(0.464)	(0.581)	(0.518)
	Less than high school relative to high school, by gender			
(4)	Men	-1.465	-0.989	-1.271
		(0.464)	(0.464)	(0.451)
	Women	0.043	0.043	0.653
		(0.635)	(0.616)	(0.593)

Note: Sample size equals 720 in specifications (1) and (3), and 480 in specifications (2) and (4).

Table 8: Weekly Hours of Work Among All People

Specification		Unemployment Rate All men	Unemployment Rate College ed.	Nonlinear L.S.
(1)	Less than high school	0.408	0.738	1.495
		(0.396)	(0.393)	(0.586)
	High school	0.454	0.375	1.384
		(0.273)	(0.270)	0.426
	Some college	1.188	0.679	1.783
		(0.251)	(0.270)	(0.394)
(2)	Less than high school relative to high school	-0.045	0.362	0.107
		(0.468)	(0.449)	(0.641)
	Less than high school, by gender			
(3)	Men	-0.421	0.234	1.290
		(0.505)	(0.500)	(0.797)
	Women	1.216	1.142	1.546
		(0.534)	(0.523)	(0.762)
	Less than high school relative to high school, by gender			
(4)	Men	-0.571	0.097	-0.102
		(0.657)	(0.643)	(0.986)
	Women	0.636	0.533	0.362
		(0.648)	(0.633)	(0.919)

Note: Sample size equals 720 in specifications (1) and (3), and 480 in specifications (2) and (4).

Table 9: Average Hourly Earnings Among Workers

Specification		Unemployment Rate All men	Unemployment Rate College ed.	Nonlinear L.S.
(1)	Less than high school	-0.006	-0.009	0.005
		(0.029)	(0.028)	(0.024)
	High school	0.001	-0.007	0.007
		(0.011)	(0.012)	0.011
	Some college	-0.009	-0.012	-0.003
		(0.011)	(0.013)	(0.011)
(2)	Less than high school relative to high school	-0.007	-0.002	-0.006
		(0.031)	(0.030)	(0.029)
	Less than high school, by gender			
(3)	Men	0.022	0.015	0.022
		(0.036)	(0.032)	(0.034)
	Women	-0.042	-0.036	-0.037
		(0.038)	(0.043)	(0.042)
	Less than high school relative to high school, by gender			
(4)	Men	0.038	0.041	0.015
		(0.039)	(0.035)	(0.035)
	Women	-0.062	-0.051	-0.058
		(0.040)	(0.046)	(0.043)

Note: Sample size equals 720 in specifications (1) and (3), and 480 in specifications (2) and (4).

Table 10: Average Weekly Earnings Among Workers

Specification		Unemployment Rate: All men	Unemployment Rate: College ed.	Nonlinear: L.S.
(1)	Less than high school	-0.071	-0.034	-0.034
		(0.036)	(0.034)	(0.027)
	High school	-0.018	-0.018	-0.007
		(0.013)	(0.015)	(0.014)
	Some college	-0.004	0.003	-0.000
		(0.014)	(0.015)	(0.013)
(2)	Less than high school relative to high school	-0.053	-0.016	-0.007
		(0.038)	(0.035)	(0.033)
	Less than high school, by gender			
(3)	Men	-0.089	-0.059	-0.048
		(0.042)	(0.037)	(0.040)
	Women	-0.038	0.009	-0.036
		(0.052)	(0.054)	(0.051)
	Less than high school relative to high school, by gender			
(4)	Men	-0.053	-0.022	-0.086
		(0.044)	(0.040)	(0.040)
	Women	-0.038	0.007	-0.014
		(0.055)	(0.056)	(0.053)

Note: Sample size equals 720 in specifications (1) and (3), and 480 in specifications (2) and (4).

Table 11: Sensitivity Analysis

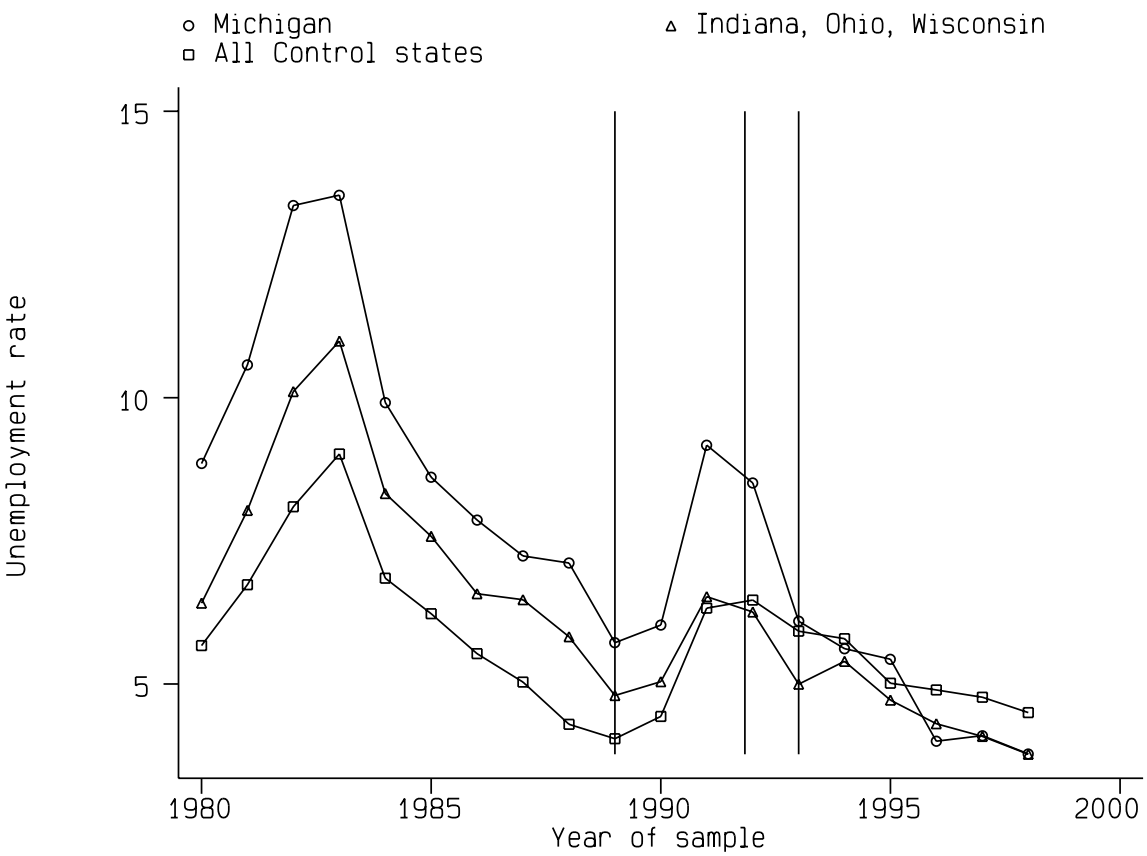
Specification		Employment		Hourly Earnings	
		Unemp. Rate for all men	Nonlinear L.S.	Unemp. Rate for all men	Nonlinear L.S.
(1)	Michigan relative to the comparison states:				
	Less than high school	0.012	0.017	-0.019	-0.005
	High school	0.001	0.003	-0.012	0.011
	Some college	-0.006	-0.003	-0.030	0.002
(2)	Less than high school relative to high school	0.011	0.024	-0.007	-0.007
	Less than high school, by gender				
(3)	Men	-0.000	-0.004	0.018	0.030
	Women	0.025	0.024	-0.062	-0.058
	Less than high school relative to high school, by gender				
(4)	Men	-0.002	0.027	0.039	0.038
	Women	0.024	0.032	-0.061	-0.048

Note: Sample size equals 720 in specifications (1) and (3), and 480 in specifications (2) and (4). Comparison states include only Indiana, Ohio, and Wisconsin.

Figure 1: Unemployment Rate and General Assistance Caseload in Michigan

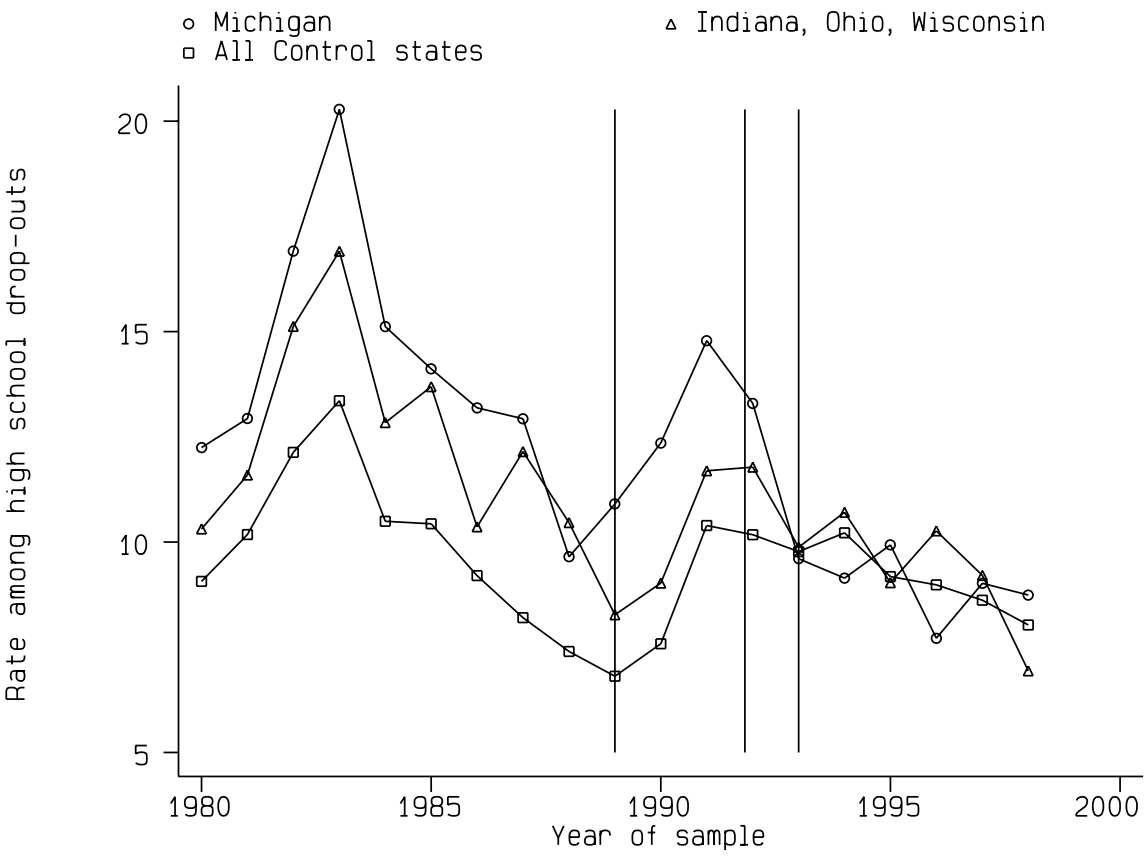
Source: Unemployment rate data is calculated from the March CPS. GA caseload data is from the State of Michigan *Assistance Payment Statistics*, various months.

Figure 2: Unemployment Rates in Michigan and Comparison States



Source: Author's tabulation of the March CPS.

Figure 3: Unemployment Rates in Michigan and Control States
People without a high school degree



Source: Author's tabulation of the March CPS.