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# A Time Series Analysis of the Effect of Welfare Benefits on Earnings

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*Policy analysts Frances Fox Piven and Richard A. Cloward have put forth a bargaining power model of earnings. More specifically, they have argued that the higher workers' bargaining power, the higher their earnings and the higher the level of welfare benefits, the higher workers' bargaining power. Thus, based on Piven and Cloward's model, one would predict a positive relationship between welfare benefit levels and earnings. Using time series data I test Piven and Cloward's model and find support for it. The policy implications of my findings are discussed.*

An ongoing concern of mainstream labor economists is the question what factors affect earnings. By mainstream labor economists I mean those who adhere to the neoclassical school of thought in economics. An ongoing concern of policy analysts, more generally, has been the effects of welfare. By welfare I mean both the recently abolished Aid to Families with Dependent Children (AFDC) program as well as its replacement the Temporary Assistance for Needy Families (TANF) program. As most readers are probably aware, both programs provided or provide cash benefits primarily to women with young children that they did or do not have to engage in market work to receive.

Perhaps surprisingly, there has been little empirical work in labor economics on the relationship between welfare benefit levels and earnings. Social welfare policy experts more familiar to social workers have long argued that there is a positive relationship between welfare benefit levels and earnings, but there has been little quantitative research in the field that test this proposition. This paper focuses on the results of such a test.

## Literature Review

In 1971, Frances Fox Piven and Richard A. Cloward published their classic work *Regulating the Poor*. One of their central arguments was that welfare benefits provide people with an alternative to selling their labor forcing employers to pay workers earnings above the level of welfare to give them an incentive to work. Piven and Cloward have made this argument in other places (Piven and Cloward, 1985), and other social welfare policy experts have proposed more recent versions of it (Blau, 1999 and Abramovitz, 1996), yet there has been little quantitative research in the policy literature familiar to social workers that has attempted to test it.

A number of labor economists and other social scientists have focused on the effects of welfare (Hoffman and Duncan, 1995; Moffit, 1992; Lichter, et al., 1997; Fairlie and London, 1997; Lewis, 1999; Hoffman and Foster, 2000; and Blackburn, 2000) and the factors that affect earnings (Bound and Holzer, 2000; Mavromaras and Rudolph, 1997; Grogger and Eide, 1995; Bratsberg and Dek, 1998; Hirsch and Stratton, 1997; Hamilton et al., 2000; Parent, 2000; Carrington and Troske, 1998; and Hellerstein et al., 1999), yet there has been little empirical research on the relationship between welfare benefits and earnings. An exception is a paper by Moffit, et al. (1998).

Moffit, et al. focused on the relative (to high-skilled workers) and absolute decline in the wages of low-skilled workers that occurred throughout much of the past 25 years or so. They attempted to determine whether this decline impacted on welfare benefits that is they modeled welfare benefits as the dependent variable with decline in low-skilled workers' wages the independent one. They found a positive relationship between decline in low-skilled workers' wages and welfare benefits and state that this may be due to two possible mechanisms.

One is that voters prefer to maintain a constant ratio of welfare benefits to the wages of low-skilled workers and pressures legislators to lower welfare benefits when this ratio increases (that is when wages decrease). Moffit, et al. argue that voters might prefer a constant ratio of welfare to low-skilled workers' wages out of a sense that it would be unfair for the well being of low-skilled

workers to decline relative to that of welfare recipients. For example, suppose the average welfare stipend were one-half the average wage of low-skilled workers and this average wage declined. As Moffit, et al. see it, voters, motivated by the considerations discussed above, might pressure legislators to decrease welfare.

The other mechanism that could account for Moffit, et al.'s finding has more to do with the work disincentive that would result from a decline in the wages of low-skilled workers. If low-skilled workers wages were to decline, raising the welfare to low-skilled wages ratio, workers might be more inclined to go on welfare. Voters concerned, about this disincentive effect, might pressure legislators to reduce welfare benefits.

The fact that Moffitt, et al. focused on the affect of the **relative** as well as absolute decline in low-skilled workers' wages means that they were focusing, in part, on the impact of an increase in wage inequality on welfare benefit levels. I focused, instead, on the impact of welfare benefits on **average** monthly earnings; that is I modeled welfare as the independent and the average monthly earnings as the dependent variable. Also, unlike Moffitt et al., I focused not on the preferences of voters but on how welfare benefit levels might affect the bargaining power of potential workers versus employers.

### The Model

Piven and Cloward (1971 and 1985) propose a bargaining power model of earnings. That is they posit that workers' earnings depend on the relative bargaining power of workers versus employers and that this relative bargaining power depends on the alternate, other than earnings, sources of subsistence available to workers. If the only way workers are able to subsist is by selling their labor to some employer earnings are likely to be relatively low. If workers have the option of subsisting without having to sell their labor earnings are likely to be higher and the higher this non-work conditioned source of subsistence the higher earnings are likely to be. In the United States one source of subsistence that people did and do not have to sell their labor for was and is AFDC and TANF. Thus, if Piven and Cloward are correct one

would expect to find higher welfare benefit levels associated with higher earnings.

To test Piven and Cloward's thesis I estimated a time series regression model of the natural logarithm of monthly earnings (measured in current dollars) on the natural logarithm of monthly welfare benefits (measured in current dollars). This allowed me to obtain an estimate of the effect of welfare benefits on earnings that gives the percentage change in earnings for each percentage point change in welfare benefits, controlling for the other independent variables in the model. I also took the natural logarithms of the control variables (discussed below). Proceeding this way allowed me to compare the effect of welfare on earnings to the effects of my control variables on earnings, enabling me to determine which of my independent variables had the biggest impact on earnings. Taking logarithms of variables to compare the relative effects of different independent variables is a standard approach in quantitative work, especially in economics (Wooldridge, 2000).

Using OLS regression I estimated the following model:

$$1. \quad \ln \text{earnings}_t = \alpha + \beta_1 \ln \text{welfare}_t + \beta_2 \ln \text{educ}_t + \beta_3 \ln \text{unemp}_t + \beta_4 \text{time} + \epsilon_t$$

where "ln" stands for the natural logarithm, " $\alpha$ " a constant, and "t" stands for a given year. Thus,  $\beta_1$  is the effect of the ln of welfare in year "t" on the ln of earnings in the same year, and  $\beta_2$ ,  $\beta_3$ , and  $\beta_4$  are defined similarly.  $\epsilon_t$  stands for the error in a given year, that is the difference between the actual ln of earnings value and predicted ln of earnings value in a given year.

I included  $\ln \text{educ}_t$  in the equation because previous research has found a positive relationship between education and earnings (Grogger and Eide, 1995). A theoretical explanation for such a relationship comes from human capital theory (HCT). According to HCT (Becker, 1993), more education makes workers more productive and, since labor markets function so that there is a positive relationship between productivity and earnings, more productive workers make more than less productive ones. An alternative explanation contends that more education doesn't **cause** workers to become more productive but, instead, signals to employers who the more productive workers are. The idea is that

more productive persons find it easier (or less costly) to acquire more schooling than less productive ones do. Thus, employers use rigorous educational standards for hiring to screen out less productive workers and pay those who meet these standards in accordance with their higher productivity (Hamermesh and Rees, 1993).

I included  $Unemp_t$  because previous research has found a negative relationship between unemployment and earnings (Blanchflower and Oswald, 1994). Bowles and Schor provide a theoretical explanation for this relationship. They posit that the extent to which workers can pressure employers to raise pay, through strikes and other actions, depends on the cost to workers of losing their jobs. The cost of losing one's job (through being fired, laid off, etc.) depends, among other things, on the likelihood of finding another job (that is on the unemployment rate). The higher the unemployment rate the higher the cost of job loss, and the higher the cost of job loss the less employers can get away with paying workers.

Time was included to control for unobserved variables that change over time and affect earnings.

### Data

I used data from the *Economic Report of the President* (Council of Economic Advisors, 1997), *A Statistical Portrait of the United States* (Littman, Mark S., 1998), and *The Green Book* (United States House of Representatives, 1998). The data was a time series covering 1960–1995. For each year I took the natural logarithms of the following variables:

1. average private sector weekly earnings (measured in current dollars)
2. average monthly AFDC benefit for families (measured in current dollars)
3. civilian unemployment rate
4. proportion of United States residents at least 25 years old that has completed four years of college

I estimated the impact of unobservable variables that change over time by including each year as values for a time variable. In other

words, 1960, 1961, 1962 . . . 1995 were the values for my time variable.

Ideally, it would have been instructive to include data on Temporary Assistance for Needy Families (TANF) the reformed version of AFDC, but data limitations made this infeasible. However, since TANF is just another form of non-wage income, if Piven and Cloward's model is valid TANF's effect on the relative bargaining power of workers versus employers and, therefore, earnings should be similar to AFDC's. Future research is needed to examine the extent of this similarity.

### Results

Table I contains the results from my regression model.

Recall that taking natural logarithms of the variables in the model allows for estimates of the percentage change in average weekly earnings for each percentage point change in a given independent variable, controlling for the other independent variables in the model. Such an estimate is called the elasticity of the dependent variable with respect to the given independent variable (Nicholson, 1989).

As expected, the elasticity of average weekly earnings with respect to welfare is positive and statistically significant; for each percentage point increase in average monthly AFDC benefits earnings increase by .44 percent. The elasticity of earnings with

Table 1

*Effect of  $\ln welfare_t$  on  $\ln earnings_t$*

<i>Variables</i>	<i>Slopes</i>	<i>T Values</i>	<i>Significance</i>
Constant	-23.49	-3.40	.003
$\ln unemp_t$	.06	1.72	.100
$\ln welfare_t$	.44	3.82	.001
$\ln educ_t$	.72	4.31	.000
Time	.01	3.34	.003

F = 1026.68, Significance .000

Adjusted R Squared = .85

D.W. = 1.2

respect to the proportion of 25 and above year old four-year college graduates is .71 and with respect to time is .01. A one-percentage point change in the unemployment rate produces a .06 percent change in earnings, but this effect is statistically insignificant. It's clear that the elasticity of earnings with respect to education is larger than any other independent variable in the model.

The adjusted R squared for the model is .85 meaning that 85% of the variation in  $\ln \text{earnings}_t$  is explained by the independent variables in the model. This adjusted R squared "nets out" the effect of time on  $\ln \text{earnings}_t$ . In other words, .85 is the amount of variation in  $\ln \text{earnings}_t$  explained by the other three variables in the model, controlling for the amount explained by time. This type of goodness-of-fit measure is the preferred one when an analyst models a dependent variable that is affected by a time trend, as is the case here. See Wooldridge (2000) for details on how to compute an adjusted R squared that removes the affect of a time trend as well as the justification of this approach. Note that an adjusted R squared of .85 is very high by social science standards.

The D.W. located beneath the table stands for the Durban-Watson d statistic, a test of the extent to which the errors in the regression model are correlated with one another. Referring back to equation #1, if we solve for  $\epsilon_t$  we get:

$$2. \quad \epsilon_t = \ln \text{earnings}_t - \alpha - \beta_1 \ln \text{welfare}_t - \beta_2 \ln \text{educ}_t \\ - \beta_3 \ln \text{unemp}_t - \beta_4 \text{time}$$

the expression for the error at a given point in time. The D.W. statistic assesses the extent to which these errors are correlated (a condition called serial correlation). Serial correlation increases the likelihood that an analyst will assume that there is a relationship between the dependent variable and a given independent variable when this is not the case. A D.W. statistic of 1.2 is within the indeterminate range, meaning that we do not have enough evidence to reach a conclusion about the likelihood of serial correlation (Studenmund, 1997). The standard remedy for dealing with this situation is obtaining more observations, but, in the present case, lack of available data made this infeasible. Thus, this strategy will have to be used in future research.



## Discussion

This paper has focused on the relationship between welfare and earnings. The inspiration is an argument first put forward in the policy literature familiar to social workers by Piven and Cloward (1971). Consistent with the theoretical prediction, I found that welfare benefits are positively related to earnings, as were education and time. The elasticity of earnings with respect to  $\ln \text{educ}_i$  was the highest in the model, suggesting that the proportion of adults that have graduated from a four-year college has the largest effect on earnings. What are the policy implications of these findings?

For those, like many social workers, who believe government should play a role in curtailing poverty, it is instructive to consider the obvious fact that poverty (whether absolutely or relatively defined) is related to income. One of the major sources of income is earnings. Thus, if government can affect earnings, this is a means of affecting the poverty rate.

The data discussed in this paper suggest that government can increase earnings more by increasing the proportion of 25 and above year olds that graduate from four-year colleges than by increasing welfare benefits. Yet government can more directly affect the welfare benefit level than the proportion of four-year college graduates. To increase college graduation the government would have to implement an incentive scheme such as subsidizing the costs of a college education. Many would respond to this incentive but many would not because the subsidy would only address some of the costs of education. The cost of forgone wages would still deter many from attending.

In order to increase welfare benefits, all the federal government would have to do is send recipients more money. It is very unlikely that many, if any, recipients would decline this increase. Although the government could do more to increase earnings by increasing educational attainment than welfare benefits, it might be more prudent to try to accomplish this goal by the latter method since it has more control over welfare benefits than the proportion of people that finish college.

Another way government can increase earnings is, of course, by raising the minimum wage. According to many economists,

increases in the minimum wage increase unemployment among low-skilled workers (Brown, 1988). According to more recent work in economics, however, increases in the minimum wage do not necessarily increase unemployment (Card and Krueger, 1995). The fact that there is some evidence that higher minimum wages cause higher unemployment among low-skilled workers should give those concerned about the well being of the poor pause.

The strategy of increasing welfare benefits might run into its own problems though. The paper by Moffit, et al. discussed above as well as recent welfare reforms suggest that the electorate might not be interested in raising the level of welfare benefits and, perhaps, may be more interested in lowering them. If this paper's findings are accurate, the electorate, by declining to raise benefits or by lowering them, would be forgoing an opportunity to increase the well being of workers. Since most members of the electorate are workers they would be forgoing an opportunity to increase their own well being.

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