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Ec317
Labour Economics
Problem Set 5

1. The AFDC caseload increased substantially during the early 1990s, leading eventually to welfare reform in 1996. This problem asks you to analyze caseload data for the 50 U.S. states and the District of Columbia in the light of labor supply theory, and assess whether economic variables can account for the caseload trends between 1979 and 1996. The data for this problem are contained in the dataset labor2.dta, which can be downloaded from the course website. We will consider two main variables, the guarantee level in the state (often called the maximum monthly benefit), and the wage.

   (a) The real wage for low wage workers has fallen substantially during the 1980s. Draw a diagram with the budget constraint for the AFDC system with two levels of the wage, a high and a low wage. There are three groups of women with different levels of hours supplied in the labor market you can distinguish on your diagram. (1) Those participating in AFDC when the wage was high. Will any of these women leave AFDC when the wage falls? (2) Those with hours in the range that they didn't participate in AFDC at the high wage, but who would participate in AFDC at the lower wage, *if they didn't change their hours in response to the wage change*. What is the labor supply response of this group? What can you say about their AFDC participation when the wage falls? (3) Those with hours even higher than group (b) when the wage was high. Will any of these women participate in AFDC now? What is the overall effect of a decline of the wage on AFDC participation?

   (b) Different states differ substantially in the level of AFDC benefits they grant. Draw another diagram with the budget constraint for the AFDC system. How does the budget constraint change when the maximum monthly benefit (the guarantee level) is raised but the tax rate stays constant? What is the effect of a higher benefit level on AFDC participation?

   (c) The dataset contains the variables `pctrecip` (the percent of the state population receiving AFDC benefits), `wage10` (an indicator for wage of low wage workers – the variable is the real value of the 10th percentile of the female wage distribution, to be precise), and `rmaxben3` (the real value of the maximum monthly benefit for a family of three). Run a simple regression of the percent receiving welfare on the wage. Why might you see the result you obtain? Do you think it reflects the effect of wages on welfare participation?

   (d) One way to address the problem in (c) is to add the benefit variable to the regression. Another one is adding a dummy variable for each state. This can be easily done in Stata without actually constructing the dummies, and without having Stata compute 51 dummy coefficients. You do it by telling Stata to "absorb" the state dummies. Instead of `regress ...` you specify

```
areg pctrecip wage10, absorb(state)
```

(there are two state variables for the state on the dataset, the name (`state`) and a code called `fips`). What results do you get for the effect of a higher wage on welfare participation now? Explain.

(e) Take this one step further and add both the wage and the benefit variable to a regression with state dummies. Are the effects of benefits and the wage what you would expect from economic theory? Might the fact that real benefits have fallen in most states help explain your finding?

(f) Add a set of dummy variables for the years in the sample. These dummy variables are included in the data set (`yr80,...,yr96`). You can add them to your regression by specifying

```
areg pctrecip wage10 rmaxben3 yr80-yr96, absorb(state)
```

(Note that you don't need a dummy for 1979, since the constant will estimate the effect for this year, and the dummies will reflect deviations from 1979). Interpret your new results.

(g) Researchers on welfare often add the unemployment rate to regressions like these. It is also provided on the data set (`unemrate`), so add it to the regression in (f) as well. Do the signs of your coefficients make economic sense now? By how many percentage points does AFDC participation respond to a $1 increase in the wage, a $100 increase in the maximum monthly benefit, and a 1 percentage point increase in the unemployment rate? Use the summarize command to look at the means of these variables. Do you think these effects are large or small compared to what you might have expected based on the labor supply model?

(h) Now return to our initial question, whether the economic variables can account for the caseload trend. Look at the coefficients on the time dummies in your regression from (g). You will see a pattern of falling and then rising caseloads. According to your results, by how much did the national trend in welfare participation rise from its trough in the 1980s to its peak in the early 1990s, controlling for the other variables in the regression? In order to gauge our success, run the regression only with the time and state dummies, but leave out the economic variables. Doing the same exercise, by how much did the AFDC caseload rise from the 1980s to the 1990s without the economic controls? How successful are we in explaining the caseload trend using the wage, the unemployment rate, and benefit levels?

(i) You can use your results for simulations of the effects of various of the variables in the regression on the caseload. From 1979 to 1993, the year in which caseload peaked, the real maximum benefit fell on average by $200, the real wage for low wage women fell by 60 cents, and the unemployment rate increased by 1.3 percentage points. Use the estimates of your regression in (g) to calculate the predicted effect of each of these changes on the caseload over this period. What do you conclude about the importance of variables having to do with incentives (the benefit variable) versus macroeconomic conditions (wages and unemployment rates) on caseload trends? By how much did caseload change from 1979 to 1993 due to the three variables benefits, wages, and unemployment combined?

(j) The welfare reforms since mid 1990s have introduced further incentives to work, but during the late 1990s the economy has also improved. From 1996 to 2003, the unemployment rate rose from 5.4 to 6.0 percent, while the real wage for low wage women rose from \$3.21 to \$3.62. Do a similar calculation as in (i) to predict the effect of these changes on the caseload. 4.7 percent of the population received AFDC in 1996, and caseloads declined by about 60 percent between 1996 and 2003. Given your calculations, what is your verdict about the relative importance of economic factors versus welfare reform for the sharp drop in the welfare caseload since 1996?