

Applied Exercise #4

– Due Tuesday 04/22/08 –

This exercise examines the effect of marginal employment on future labor market outcomes of unemployed workers. Marginal employment is a special job with a wage below a certain threshold. Unemployed workers are allowed to keep their full insurance benefits while working in a marginal job.

The research question we analyze is: does a marginal job help an unemployed worker to find stable employment, or does it have a negative effect on their career? To answer the question we look at unemployed workers who take a marginal job during the first 6 months after becoming unemployed and at workers who did not take a marginal job. Then we compare their wages and employment in the second year after entering unemployment.

For more background information read: Rene Böheim and Andrea Weber “The Effects of Marginal Employment on Subsequent Labor Market Outcomes” (2006), IZA Discussion Paper No. 2221. http://www.iza.org/en/webcontent/publications/papers/viewAbstract?dp_id=2221

Each student must hand in their own solution to the problem set using own words to explain and interpret the results. Please include a concise summary of your empirical results when appropriate.

Data:

margemp_9.dta - in STATA9 format

The data set is an extract from the Austrian Social Security registers. It follows workers who lost a job and became unemployed between March and August 1999.

There are 51,619 observations and 62 variables.

The key variables for this exercise are:

marginal – indicator equal to 1 if the worker took a marginal job within 6 months of entering unemployment

o_dempl2 – number of days employed in the second year after entering unemployment

o_mwage2 – monthly wage in the second year after entering unemployment

The relevant control variables are:

female –

age – age in years

edu1-edu6 – education indicators from the lowest to highest educational level

foreign – foreign nationality

married –

reg1-reg8 – regional indicators

occup1-occup9 – occupation indicators

month1-month6 – month of job loss (e.g. month1=1 if worker got unemployed in 03/1999)

labor market history information

pdempl1-pdempl5 – percentage employed in year 1-5 before job loss

pdmarg1-pdmarg5 – percentage marginal employed in year 1-5 before job loss

pdunempl1-pdunempl5 – percentage unemployed in year 1-5 before job loss
mwage1-mwage5 – monthly wage in year 1-5 before job loss
nempl1-nempl5 – number of jobs held in year 1-5 before job loss

Questions:

- a) Under what conditions can one identify the average treatment effect of marginal employment by comparing the unadjusted difference in mean days employed in the second year after job loss of workers who took a marginal job and workers who did not? Under the assumption that marginal employment is randomly assigned, estimate its impact on days employed in year 2. Provide some evidence for or against the hypothesis that marginal employment is randomly assigned, by looking at the means of observable characteristics for marginal and non-marginal workers.
- b) Suppose marginal employment is randomly assigned conditional on the other observable determinants of employment in year 2. What does this imply about the relationship between marginal employment and unobservable determinants of employment in year 2 conditional on the observables? Use a basic linear regression model to estimate the impact of marginal employment and report your estimates. Under what conditions is the average treatment effect identified?
- c) Under the assumption of random assignment conditional on the observables, what are the sources of misspecification bias in the estimates generated by the linear model estimated in b)? Now use an approach in the spirit of multivariate matching. In other words, estimate the effect of marginal employment using a flexible functional form for the control variables (i.e. higher order terms and interactions). What are the benefits and drawbacks to this approach?
- d) Describe the propensity score approach to the problem of estimating the average causal effect of marginal employment when the treatment is randomly assigned conditional on the observables. How does it reduce the dimensionality ‘problem’ of multivariate matching?
- e) Implement the propensity score approach to the evaluation problem using two methods: 1) control directly for the estimated propensity score in a regression model; 2) use the estimated propensity score in a classification scheme to ‘stratify’ the sample. Provide empirical evidence that your implementation is reasonable and evidence on the overlap of the observables of marginal workers and non-marginal workers. (This is an open-ended question, so show what you know and be creative/thoughtful.)

- f) A more informative way to describe the effect of marginal employment is to estimate the ‘non-parametric’ conditional mean of days employed in year 2 as a function of the estimated propensity score, separately for marginal workers and non-marginal workers. To do this simply, stratify the marginal workers into 20 equal sized cells, based on their propensity scores and calculate the mean days employed in year 2 and the mean propensity score in each cell. Do the same for non-marginal workers. Plot these 2 conditional mean functions, with the mean propensity scores on the x-axis and the mean days employed on the y-axis. Interpret your findings and relate them to the results in e). Redo the above using 50 equal-sized cells for marginal workers and non-marginal workers.
- g) Estimate the impact of marginal employment on wages in year 2 using the methods in parts a), b) and f) (using 20 equal-sized cells for marginal workers and non-marginal workers.) Interpret your findings. From your results, what might you conclude about the relationship between marginal employment and the wages in year 2?
- h) Concisely and coherently summarize your results above. Write it like you would the conclusion of a paper. In this summary, describe the estimated effects of marginal employment on future wage and employment outcomes and whether you think your “best” estimate of the effects of marginal employment is credibly identified. State why, or why not.