Econometric Game 2012

Case A

How does maternal smoking during pregnancy affect infants' birthweight?

Background

Birthweight is a leading indicator of infant health and adverse birth outcomes are known to have large economic costs, both in the form of direct medical costs and in terms of long-term developmental consequences (see, e.g, Abrevaya, 2006, and Abrevaya and Dahl, 2008, and the references therein). It is, therefore, interesting and important to study the factors affecting the infants' birthweight. In particular, it is interesting to study how maternal behaviour influences birth outcomes.

Research Question

Study the possible effects of maternal smoking during pregnancy on the distribution of infants' birthwight. There are many ways to address this question and therefore you should decide what is the most interesting and informative approach to use.

Data

The data are a cross-section of 141929 observations which we assume to be representative of the population of interest. The data are described in detail in the file `data_details_A.txt` and the variables available are similar to those used by Abrevaya (2006).

Modelling Issues

There are a number of issues that can be considered. 1) What is the appropriate set of conditioning variables to use and why? 2) What is the most appropriate specification to use (for instance, is the effect of smoking additive or multiplicative)? 3) How should smoking be measured? 4) Are there any outliers in the data and if so what should be done about it? 5) What features of the conditional distribution of birthweight are affected by smoking (for example, is it just the mean that is affected)? 6) Does the effect of maternal smoking depend on the value of other variables? 7) Does maternal smoking affect the probability of low- and high-weight births (defined as birthweight lower than 2500g and higher than 4000g, respectively? 8).How should significance be assessed? 9) Can your results be interpreted as causal?

You do not have to address all of these issues but you should: a) provide clear justifications for the choices you make; b) clearly interpret your results; and c) spell out any limitations of your analysis.

References

Abrevaya, J. (2006), "Estimating the Effect of Smoking on Birth Outcomes Using a Matched Panel-Data Approach," *Journal of Applied Econometrics*, 21, 489–519.

Abrevaya, J., and Dahl, C.M. (2008), "The Effects of Birth Inputs on Birthweight: Evidence From Quantile Estimation on Panel Data," *Journal of Business & Economic Statistics*, 26, 379–397.