Empirical Exercise: Chapter 7

Use the **Birthweight_Smoking** data set introduced in the previous chapter to answer the following questions. To begin, run three regressions:

1. *Birthweight* on *Smoker*
2. *Birthweight* on *Smoker*, *Alcohol*, and *Nprevist*
3. *Birthweight* on *Smoker*, *Alcohol*, *Nprevist*, and *Unmarried*

a. What is the value of the estimated effect of smoking on birth weight in each of the regressions?
b. Construct a 95% confidence interval for the effect of smoking on birth weight, using each of the regressions.
c. Does the coefficient on *Smoker* in regression (1) suffer from omitted variable bias? Explain.
d. Does the coefficient on *Smoker* in regression (2) suffer from omitted variable bias? Explain.
e. Consider the coefficient on *Unmarried* in regression (3).
   i. Construct a 95% confidence interval for the coefficient.
   ii. Is the coefficient statistically significant? Explain.
   iii. Is the magnitude of the coefficient large? Explain.
   iv. A family advocacy group notes that the large coefficient suggests that public policies that encourage marriage will lead, on average, to healthier babies. Do you agree? (*Hint:* Review the discussion of control variables in Textbook (Section 6.8). Discuss some of the various factors that *Unmarried* may be controlling for and how this affects the interpretation of its coefficient.)
   v. Consider the various other control variables in the data set. Which do you think should be included in the regression? Using a table like Table 7.1, examine the robustness of the confidence interval you constructed in (b). What is a reasonable 95% confidence interval for the effect of smoking on birth weight?

Table 7.1

Results of Regressions of Test Scores on the Student–Teacher Ratio and Student Characteristic Control Variables Using California Elementary School Districts

Dependent variable: average test score in the district.

Regressor	(1)	(2)	(3)	(4)	(5)
Student–teacher ratio (X_1)	−2.28	−1.10	−1.00	−1.31	−1.01
	(0.52)	(0.43)	(0.27)	(0.34)	(0.27)
	[−3.30, −1.26]	[−1.95, −0.25]	[−1.53, −0.47]	[−1.97, −0.64]	[−1.54, −0.49]
Control variables					
Percentage		−0.650	−0.122	−0.488	−0.130