Empirical Law and Economics
Bar Ilan University
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This test is open book, open notes, open internet. You may not consult any other person regarding your answers to this exam.

Each of the following questions is worth 10 points

1. What is the omitted variables bias?

Omitted variable bias arises when an empirical regression fails to include some control variable(s) that influences the outcome and is also correlated with variables that are included. In that case, the coefficients estimated will include their "true" effect and some part of the effect of the omitted variable(s), leading to upward or downward bias. This bias will not be remedied by collecting more observations

2. Why is random sampling important for statistical analyses?

Random sampling is necessary for drawing inferences about the general population. The law of large numbers indicates that sample means will converge to the population mean if there is random sampling. If sampling is not random, convergence cannot be expected regardless of the sample size.

3. How do randomized experiments "solve" the omitted variables bias problem? Are there any problems that arise in the experimental context?

Omitted variable bias arises when determinants of the outcome are not included in the model AND those determinants are correlated with the determinants that are included. Randomization of treatment status in an experiment does nothing to include the omitted variables, but it does ensure that there is no correlation between those omitted variables and treatment status, thus omitted variable bias does not arise. In terms of problems, experiments may be infeasible in many contexts for reasons related to cost, ethics, etc. Also, in experiments involving humans, the subjects cannot be forced to remain in the experiment. If there is differential attrition, omitted variable bias can arise. Experiments may not yield external validity if the experimental context is different from the real world context in important ways.

4. What is the purpose of having a "control" group in a randomized experiment?

The control group accounts for time trends (or changes in characteristics that vary over time) that may otherwise be conflated with the treatment effect.

5. Describe the source of the omitted variables bias that causes problems in determining the causal effect of police on crime. Describe how a modern study has attempted to solve the problem in this context.

There is likely to be reverse causation as places with more crime (or expecting crime to increase) are likely to hire more police. There may also be budgetary and cultural sources of omitted variable bias

as some of the things that may influence crime (economic conditions, social cohesion, etc) also affect the ability and willingness of a jurisdiction to hire more police. Levitt used electoral cycles to isolate the causal effect (mayors hire more police in election years to secure re-election by appearing tough on crime but election timing is generally a historical artifact not driven by anything related to crime). Klick and Tabarrok use the increase in police in Washington DC occasioned by concerns about terrorism.

6. Describe Henry Manne's "market for corporate control" hypothesis. How does the experience of Hershey's 2002 attempted sale support Manne's hypothesis?

Managers generating large agency costs will cause their firms' share prices to drop relative to what the firms' assets are worth (if they were managed more optimally). This creates a profit opportunity for corporate raiders who can take over the firm at the depressed price, put better management in place, leading to value appreciation. The fear of losing their job in this way, according to Manne, likely constrains shirking on the part of management.

Hershey is controlled by a trust that has no financial incentive to monitor management. In such a context, Manne's mechanism will not hold since management recognizes it is isolated from the market for corporate control. When the trust was induced to sell its controlling interest in the firm (30% of shares but 70+% of votes), the price for shares that would not be involved in any sale (i.e., the publicly traded shares with limited voting rights) spiked. Presumably this indicates that the market expected Hershey management to now be subjected to the Manne mechanism. Share prices declined symmetrically when the sale was abandoned, reflecting a return of protection for management.

7. Some experts suggest that policymakers should not "believe" individual empirical papers but rather they should believe literatures (i.e., multiple papers on the same general topic). Why is this good advice?

No design is likely to be perfect but multiple imperfect designs that complement each other provide confidence in consistent results. Complementary designs are less likely to all suffer from the same source of bias. Thus, if they converge on a result, it is less likely that the result is driven by statistical bias.

8. In the light of your answer to #7, how are the three papers Klick and Stratmann (2003), Klick and Stratmann (2008), and Klick, Neelsen, and Stratmann (forthcoming) more "believable" as a literature than each of them are individually? What sources of concern remain?

These papers are complementary. While the 2003 paper may be driven by unmodeled cultural change relating to the "free love" movement, this is less likely in the subsequent papers. Further, the 2008 paper allows for contemporaneous within jurisdiction comparisons that minimize concerns about unmodeled cultural changes. The consistency of results across many jurisdictions and time periods also adds confidence.

Remaining concerns involve the use of STD data as a proxy for risky sex. If this is actually not very indicative of risky sex, all three papers have the same problem. Also, one would have more confidence if the authors were not consistent across the papers; thus any researcher bias would not be mitigated by the production of additional papers, etc.

9. Pick one of the questions (1-8) above to count double (i.e., your points for #9 will be equal to the number of points you received for whichever question you pick).

10. Pick one of the questions (1-8) above to count double (i.e., your points for #10 will be equal to the number of points you received for whichever question you pick). You may not choose the same one you chose for #9.