

Final Exam - Answer All Questions

1) (20 points) Each week, the U.S. Professional Golfers' Association (PGA) publishes an updated ranking of the world's best professional golfers. These are the top seven golfers in the PGA ranking based on professional golf tournaments through May 14, 2006:

1 - Tiger Woods, 2 - Phil Mickelson, 3 - Retief Goosen, 4 - Vijay Singh 5 - Jim Furyk
6 - Ernie Els, 7 - Sergio Garcia,

a) (10 points) Briefly discuss the likely methods the PGA uses to construct their weekly ranking. Explain why you think the PGA ranking of top golfers is more or less accurate than the *U.S. News and World Report* ranking of the top U.S. colleges and universities.

b) (10 points) Both the PGA ranking and the *U.S. News* ranking are examples of *commensuration* - a process of applying the same numerical yardstick to different units (different golfers, different universities) in order to rank them. Based on the topics we have discussed this semester, identify a second important education example of commensuration and explain its advantages and limitations.

2) (20 points) Congress is currently debating U.S. immigration policy including whether the nation should maintain a large guest worker program that would allow significant numbers of Latin American citizens to work here on a temporary basis.

a) (10 points) We know from basic economic theory that when labor becomes scarce and expensive, employers have an incentive to substitute capital for labor. If Congress fails to renew a guest worker program, to what extent will employers be able to directly substitute computers for the work previously done by Latin American guest workers? Most of the work? Some of the work? Not much of the work? Carefully explain your logic and illustrate your answer with some specific examples.

b) (10 points) During the semester, we argued that computers play a role in determining the earnings gap between college graduates and high school graduates. Does this argument have any relevance for the demand for guest workers? Explain why or why not.

3) a) (15 points) Construct an argument supporting very early childhood education (ages 6 months to 5 years) as a central piece of U.S. educational policy. Back up the points you make by references to specific readings and ideas discussed in class.

b) (5 points) Briefly summarize evidence for the counter argument that we don't yet know enough to spend large sums of money on very early childhood education.

4) (20 points) Assume that in the year 2001, the Colorado state legislature recognized that student access to public school computers varied dramatically across the state's counties. Urban and suburban counties averaged three students per computer and most of the computers had internet access. Poorer rural counties averaged 21 students per computer and many of the rural school computers lacked internet access.

Members of the legislature believed that lack of computer and internet access was depressing achievement test scores of rural students. Correspondingly, the legislature funded a program that was supposed to purchase computers, software and internet access for "computer poor" counties.

It is now 2006 and the legislature wants to set up an evaluation of the computers' impact. They have turned to you to do the job.

a) (10 points) When administrators establish a program like this, problems often arise that limit the possibility of doing a good evaluation. For example, suppose that you have heard anecdotes that some rural teachers who received the state-funded computers and software used their own funds to purchase in-service training on how to use computers in the classroom. If that actually happened, would it prevent you from evaluating the computers' impact on test scores? Explain why or why not. Describe two other problems (other than data problems) that might prevent you from doing a good evaluation of the computers' impact.

b) (10 points) Assume that none of these problems actually arise. Explain how you would structure an evaluation of computers' impact on test scores - the data you would need, the way you would use the data, and so on.

5) (20 points) For many years, educational production functions have had a central role in economists' study of education. As in production function analysis for private sector firms, the idea is to collect data from schools to estimate the relationship between a school's inputs and a particular school output – normally some kind of student test score.

In both firms and schools, the estimated relationship between inputs and an output depends on several factors. There is an underlying technology that specifies the maximum amount of a particular output that can be achieved with a particular combination of inputs. There is also the behavior of managers, workers, etc. that determines whether the maximum of a particular output is actually achieved. For example, technology may say that an office worker has the potential to write 45 pieces of correspondence in a day, but this output will be far lower if the worker is told to answer incoming telephone calls as well as write correspondence.

a) (6 points). When economists use private sector data to estimate a production function - for example, the production function for automobile plants - what assumptions are they making about the manager and worker behavior that generated the data? What are the implications of this behavior for the estimated inputs-output relationship?

b) (7 points) Explain how the principal and teacher behavior that generate data for a standard educational production function may differ from the behavior in a private sector firm. What are the implications of these differences for the estimated educational production function?

c) (7 points) Use your answers in (a) and (b) to explain why it makes sense to run careful experiments on the impact of class size (e.g. Krueger's STAR experiment in Tennessee) or to carefully describe a successful model for in-service training of tenured teachers (e.g. Elmore's study of New York City District 2). In other words, why haven't schools already discovered this knowledge in the course of their normal behavior?
