Prof. Bryan Caplan
bcaplan@gmu.edu
http://www.bcaplan.com
Econ 812

**HW #7**

1.  Analyze the moral hazard problem the arises in the professor-RA relationship. To what extent can a professor *infer* the effort level of the RA by examining his or her output?  Why don't RA's shirk more than they already do? (1 paragraph)

2.  Imagine that cars are worth X to their current owners, with X uniformly distributed on the interval [0,100].  These cars are however worth b*X to buyers. There is asymmetric information: current owners know their cars' true value, while buyers know only average values.  Analyze market efficiency as a function of b.  To do so, you will need to calculate total potential surplus and compare it to equilibrium surplus.

3.  Suppose there are seven workers.  The PDV of their lifetime labor is as follows:

| Worker # | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| $ PDV | 1,000,000 | 1,200,000 | 1,400,000 | 1,600,000 | 1,800,000 | 2,000,000 | 2,500,000 |

Employers cannot tell how productive a worker is, but they CAN tell whether a worker has a college degree, and they know the **AVERAGE** value of workers with and without college degrees. *Competition forces them make worker pay equal their average PDV.*

      A.     What will the PDV of lifetime earnings be for workers with and without college educations be if...?  Fill in the following table.

*(Hint: What is [1M+1.2M+1.4M+1.6M+1.8M+2M+2.5M]/7 ?)*

| Worker #'s w/ College Degrees | Without College PDV | With College PDV | College Premium |
|---|---|---|---|
| 1-7 | -- | $1,642,857 | -- |
| 2-7 | $1,000,000 | $1,750,000 | $750,000 |
| 3-7 | | | |
| 4-7 | | | |
| 5-7 | | | |
| 6-7 | | | |
| 7 | $1,500,000 | $2,500,000 | $1,000,000 |

      B.     Suppose you are worker #4.  Workers #1-3 don't have college degrees; workers #5-7 do.  What is your PDV of earnings without a college degree?  With a college degree?

      C.     What are the **total** earnings of the *other* workers if you (still worker #4) get a college degree?  If you don't?

      D.     Suppose worker #4's college costs $500,000 total.  What is the net gain of college to worker #4?  The net gain to all seven workers?

      E.     Are there externalities of education in this problem?  Explain.

4. Prove/show that if you know the value you put on an object in a second-price auction, it is a weakly dominant strategy to bid your true value exactly.

5. Consider your career goals. From this perspective, what aspects of your graduate education would you say are signaling? What aspects actually increase your productivity? To what extent can you reasonably generalize from your personal experience to the average student's? (1 paragraph)

6. Consider all-you-can-eat buffets. In what sense might these suffer from (a) moral hazard; (b) adverse selection; (c) a winner's curse? (half page)

7. Before you learned about the "winner's curse," were you appropriately adjusting for it in your real-world behavior? Analyze two examples. (half page)

8. Regulation of health and safety is often justified in terms of "imperfect information." How, in theory, could regulation improve market performance in these areas? What, in practice, does regulation do? (half page)