Economics 152
Problem Set 5
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Seniority Pay

1.
a. You are in period T-1. (In other words, after this period, there is only 1 more period until you retire). The chance of getting caught shirking if you shirk this period is .2. If you get caught shirking, you will be fired at the end of this period. Your job pays 80K/period. Your next best alternative pays 60K/period. It's worth 3K to you to be able to goof off for a period. Calculate your expected gains for shirking and for not shirking. Which do you choose? (Show your work).
b. If a firm always pays you your VMPt at every point in time, are you more inclined to shirk when you're older (more years on the job) than when you're younger? Explain.
c. A beautiful golf course near a place of business abruptly closes down. (It gets turned into a parking lot.) Would you expect this to raise or lower the probability that more senior workers would choose to shirk? Explain. (Assume no one was able to sneak away to play golf during business hours.)

Tournaments

2. You are trying to set up the salary scale at your firm where you wish to hold a tournament. All individuals at the firm produce the same thing, coal, and two jobs "diggers" and "chiefs", are merely set up for reasons of motivation. It is very difficult to count or weigh coal, but when stacked up, it is easy to see which worker's output fills a larger truck. Coal sells for $1.00 per pound and is produced as follows:

$q = m + e$

where q is the number of pounds of coal, m is effort, and e is a luck factor, reflecting the hardness of the shaft that was mined and other factors over which the worker has no control.

A worker's cost of effort is $C(m) = (1/6)m^2$. There are two workers, j and k. Each worker experiences luck, e_j and e_k, respectively. $x = e_k - e_j$ takes on values between -1 and +1 with a uniform probability distribution. (All this means is that g(x), the PDF of $e_k - e_j$, is equal to 1/2 at all points between -1 and 1. In particular, it means g(0)=1/2.)

Suppose you announce that at the end of the job the worker with the larger pile of coal will be paid a chief's wage of w_1 and the losing worker will be paid a digger's wage, w_2.

a) If the firm chooses the profit-maximizing w_1 and w_2, how much effort m will each worker choose?

b) What w_1 and w_2 will the firm choose to get the workers to put forth this amount of effort?

c) What is the firm's profit at this level of output and this wage schedule?

d) Suppose instead the firm chose $w_1=8$ and $w_2=4$. How much effort would each worker choose?

e) What is the new profit level?