

UNIVERSITY OF TORONTO
DEPARTMENT OF ECONOMICS

ECONOMICS 381H5S – SUMMER 2009
MANAGERIAL ECONOMICS II: PERSONNEL ECONOMICS

Midterm 2

Instructions

The test is 50 minutes long. Non-programmable calculators are allowed. The test consists of four questions, each worth 5 points. Show all your work in the space provided below the question. If you need additional space, you may write on the back of the page.

LAST NAME _____

FIRST NAME _____

STUDENT NUMBER _____

GOOD LUCK!

Question 1	Question 2	Question 3	Question 4	Total
/5	/5	/5	/5	/20

1. The average math score of students in Trudeau High School in Ottawa is given by $q=e+u$, where e is teacher's effort and u is a random variable with a mean of 0 and a variance of 2. The teacher's disutility of effort is $c(e)=e^2/8$. The teacher is risk averse, with the coefficient of absolute risk aversion equal to 3. The school principal is risk-neutral. What is teacher's risk premium if the school principal designs an optimal piece rate contract?

2. Employee's contribution to the firm is given by $q=e+u$, where e is employee's effort and u is a random variable with a mean of zero. The cost of effort function is $e^2/6$. Both the employee and employer are risk neutral and have an outside option of zero. Compare the value of the expected social surplus when the employer uses q as a performance measure and when the employer uses $y=kq$ as a performance measure, where k is a parameter that the employee can manipulate. The employee knows that the actual value of k is 1, while the employer knows only that k has a mean of 1 and a variance of $V=1$.

3. Tropicana Products, a company owned by Pepsi that specializes in the production of orange juice, employs two orange pickers. The number of oranges picked is $q_1=e_1+0.5u$ for the first picker and $q_2=e_2-0.5u$ for the second picker, where e represents pickers' effort and u is a random variable that is distributed uniformly on $[-1, 1]$. The pickers are risk-neutral and have the same cost of effort function given by $e^2/4$ and the same outside option. Tropicana currently pays a wage $w_i=q_i$ to each picker $i=1,2$, but this payment method is costly because the company has to count the number of oranges picked by each worker each day. Design an alternative payment method that may lower Tropicana's measurement costs but still provide optimal incentives to pickers.

4. Explain why fixed bonus pools are rarely used by companies.