AS/ECON 4070 3.0AF Assignment 2 due : Wednesday November 22

Do **all 5** questions. All count equally

1. If someone used an uncompensated demand curve, instead of the compensated demand curve, in estimating the efficiency effects of a tax on some good, how would this mistake affect the estimate of the **marginal** excess burden from an increase in the tax?

2. Could it be optimal to tax video rentals at $1.40 per rental, and books at $2.10 per book, if the net–of–tax price of video rentals was $4, the net of tax price of books was $20, and the compensated demands for video rentals and books obeyed the equations

$$Q_V = 40 - 3P_V + P_B$$

$$Q_B = 100 + P_V - 2P_B$$

where Q_V and Q_B are the quantities demanded of video rentals and books, and P_V and P_B are the prices (including taxes) paid by consumers? Explain briefly.

3. Suppose that the government levied a proportional income tax at the rate τ, and used all the proceeds to give everyone in the country a cash grant. Suppose further that the average income level (in thousands of dollars) in the country was

$$30(1 - 3\tau^2)$$

Which tax rate τ would maximize the cash grant?

4. A taxpayer faces a marginal income tax rate of 40 percent, and is deciding how much income to report. Let X denote the amount of income she chooses **not** to report, in thousands of dollars. The probability that she will be caught, if she underreports her income, is 0.15. If she is caught, and has underreported any income at all (that is, if $X > 0$), she will have to pay a fine of 1 (again, all figures are in thousands of dollars), plus an additional penalty of $bX + X^2$ (this penalty includes the tax that she has to pay).

She wants to choose X so as to maximize her expected net income.

i What should X be if $b = 2/3$?

ii What should X be if $b = 1$?

over

5. Suppose that a taxpayer faces an all–or–nothing choice : either report her income from some transaction, or not. [That is, she will not under–report the income, just report it all or report none of it.] The amount of the income is $10,000. The person's marginal tax rate is 40 percent. If she does not report the income, and is caught, then she must pay the tax owing, plus a penalty of half the tax owing, plus a further penalty of $6000.

(*i*) What should she do, if all she cares about is the expected value of her net income, if the probability that she will be caught is a (where $0 < a < 1$) if she does not report the income?

(*ii*) If the government can influence the probability of a cheater being caught, by spending more money on enforcement, what level of the probability of catching cheaters a should they choose if they wish to prevent all cheating, at the minimum possible enforcement cost? [Here assume that the government cannot alter the penalty for underreporting.]