GS/ECON 5010 Section "B" Assignment 2 F2014

due : Wednesday October 15 8:30 am

Do all 5 questions. Each counts 20%.

1. For what values of α, β and γ would the following pair of functions represent the Marshallian demand functions of a consumer with income y, facing prices (p_1, p_2)?

$$x_1^M(p_1, p_2, y) = \frac{y}{2p_1} + \frac{p_2}{p_1}$$

$$x_2^M(p_1, p_2, y) = \alpha\frac{y}{p_2} + \beta\frac{p_1}{p_2} - \gamma$$

2. The following table lists the prices of 3 goods, and the quantities a consumer chose of the goods, in 3 different years.

For what values of A do these data satisfy the strong axiom of revealed preference?

t	p_1^t	p_2^t	p_3^t	x_1^t	x_2^t	x_3^t
1	5	1	1	25	20	25
2	5	1	1	25	40	40
3	1	1	5	25	30	A

3. Write down a von Neumann–Morgenstern expected utility function for a person who would be willing to choose **both** of the following actions if her initial wealth were $W = 200$:

(i) Pay more than \$100 for insurance against a disaster which would lose her all her wealth with probability 0.5.

(ii) Pay more than \$100 for an investment which would double her wealth with probability 0.5, and leave her wealth unchanged with probability 0.5.

4. (This is an example of the "St. Petersburg paradox".) If a person were a von Neumann–Morgenstern expected utility maximizer, with a constant coefficient of relative risk aversion of 2, what would be the certainty equivalent to the following compound lottery?

A coin is tossed once. If it lands "heads", she gets \$1000000. If it lands "tails", the coin is tossed again. If it lands "heads" on the second toss (after "tails" on the first), she gets \$2000000. It it lands "tails" on both of the first two tosses, the coin is tossed again, and, if it lands "heads" on the third toss (after landing "tails" twice) she gets \$4000000. The coin–tossing continues until the first "heads", and her payoff will be 2^t million dollars, where t is the number of times that the coin landed "tails" consecutively before the first "heads".

5. If a person were a von Neumann–Morgenstern expected utility maximizer, with a constant coefficient of relative risk aversion of β, with wealth W_0 and she faced a 50% chance of losing all her wealth in some accident, for what values of β and W_0 would she be willing to buy an insurance policy which provided full insurance against the accident, at a cost of a fraction $\alpha > 0.5$ of her wealth?