

# Paris School of Economics, Master 1 APE

## Microeconomics 1, Problem Set 8

Michaelmas Term 2007-2008

### Exercise 1

A wage earner, Mister Z, with initial wealth  $w = 1000$ , has a Bernoulli utility function  $u(x) = \sqrt{x}$ . His monthly wage amounts to 3000 euros. He can be sacked with probability 0.05. An insurance company designs an insurance contract against unemployment. Mister Z would pay an insurance premium of 200 euros to receive 2000 euros if he were sacked. There are only two periods: a first one at which decisions are taken and a second one at which all uncertainty is resolved.

1. Compute Mister Z's absolute and relative coefficients of risk aversion.
2. Does Mister Z decide to insure himself against unemployment?
3. What is the maximum insurance premium the insurance company should be asking for if it wants Mister Z to buy a contract?

### Exercise 2<sup>1</sup>

Forecasters predict there is a 50% probability that the upcoming growing season will be a drought. Assume Ted is an expected utility maximizer with a Bernoulli function  $u(x) = \ln(x)$ . Ted's initial wealth is equal to zero.

Ted initially has the choice between two crops (Potatoes/Strawberry) yielding the following payoffs (in euros):

	Normal Rain	Drought
Potatoes	5 000	40 000
Strawberry	20 000	12 000

There are constant returns to scale in (the payoffs of) each production.

1. If Ted can only plant one crop, which crop should he plant?
2. Ted can choose any combination of Potatoes and Strawberry crops. Which crop mix should he choose?
3. Assume Ted decides to plant half of his land with each crop. He is offered Strawberry insurance. This insurance costs 5 000 euros and pays 10 000 euros in the case of a drought. Should Ted buy it?

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<sup>1</sup>Taken from the Exam 2006-2007.