

Assignment 2: Econ 191AU
Professor Garratt

Consider the following two payment options:

Scenario A: A gamble that pays \$100 with probability p and \$0 with probability $(1-p)$.

Scenario B: A payment of \$ x with probability 1.

In the table below, for each cash amount x , write down the probability p at which you would be indifferent between the payment options described in Scenario A and B. As a guide to get started, consider the case where $x = 10$. Answer the following questions by circling True or False.

1. I would prefer \$10 for sure to a gamble that pays \$100 with probability .05. T or F
2. I would prefer \$10 for sure to a gamble that pays \$100 with probability .1. T or F
3. I would prefer \$10 for sure to a gamble that pays \$100 with probability .2. T or F
4. I would prefer \$10 for sure to a gamble that pays \$100 with probability .3. T or F
5. I would prefer \$10 for sure to a gamble that pays \$100 with probability .4. T or F

Suppose you circled T for questions 1-3 and F for questions 4 and 5. Then the value of p that you put in the table below next to \$10 should be somewhere between .2 and .3.

I	x_i	p_i
1	\$10	
2	\$20	
3	\$30	
4	\$40	
5	\$50	
6	\$60	
7	\$70	
8	\$80	
9	\$90	
10	\$100	1

Table 1

Your assignment is to estimate your own private risk aversion parameter. To do this, assume that your von Neumann-Morgenstern utility function for cash payments (made with certainty) takes the form $u(x) = x^\alpha$. Then your answers in Table 1 represent the solution to the following equation:

$$p_i 100^\alpha = x_i^\alpha,$$

for each observation $i=1, \dots, 10$.

We want to convert this equation to a linear form (without an intercept) so we can run an OLS regression. Take the natural logarithm of both sides to get

$$\ln p_i + \alpha \ln 100 = \alpha \ln x_i.$$

Next, rewrite the expression as

$$\ln p_i = \alpha(\ln x_i - \ln 100)$$

for $i=1, \dots, 10$.

Produce an excel worksheet with the columns shown in Table 2 below:

A	B	C
i	$\ln x_i - \ln 100$	$\ln p_i$
1	-2.303	
2	-1.609	
3	-1.204	
4	-0.916	
5	-0.693	
6	-0.511	
7	-0.357	
8	-0.223	
9	-0.105	
10	0.000	

Table 2

Input the values for the third column. Now run a regression in excel of the 10 values in column B on the 10 values in column C with the constant set to zero. Your slope estimate from the regression is your risk parameter. Call that value a , and write that value here _____. Now recompute the slope of your bid theoretical bid function for the 2-bidder auction as $1/(1+a)$. Write that value here _____. Look up the slope of your estimated bid function for the 2-bidder auction from Assignment 1. Write that value here _____.

Do you think that our expanded model of equilibrium bidding in first-price auctions that allows for risk aversion does a good job of explaining your bidding behavior? Explain why or why not.