

Microeconomics

1. A persons utility function is of the form $U(x, y) = 5xy$. The yen prices of good x and y are $p_x = 4$ and $p_y = 2$, respectively. The persons income is 1200.
 - a) Show that these preferences are homothetic?
 - b) What quantities of x and y should the consumer purchase to maximize his utility?
 - c) Determine the persons income offer curve (IOC). Draw it.
 - d) Explain whether each of the two goods is normal or inferior.
 - e) Derive the Engel curve for x . Draw it.

2. Takeshi is a risk averter who tries to maximize the expected value of $C^{1/2}$, where C is his wealth. Takeshi has 5 million yen in safe assets and he also owns a house that is located in an area where there are a lot of forest fires. If his house burns down, the remains of his house and the lot it is built on would be worth only 4 million yen, given him a total wealth of 9 million yen. If his home does not burn, it will be worth 20 million yen and the total wealth will be 25 million yen. The probability that his home will burn down is 0.01.
 - a) Calculate his expected utility if he does not buy fire insurance.
 - b) Calculate the certainty equivalent of the lottery he faces if he does not buy fire insurance.
 - c) Suppose that he can insurance at a price of 10 yen per 1000 yen of insurance. For example, if he buys 10 million yen worth of insurance, he will pay 100,000 yen to the company no matter what happens, but if his house burns, he will also receive 10 million yen from the company. If Takeshi buys 16 million worth of insurance, what will be his wealth?
 - d) If he buy full insurance, what is his certainty equivalent of his wealth? What is his expected utility?

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1. Read the first two sections of the article by Gadi Barlevy “The Cost of Business Cycles and the Benefit of Stabilization” *Economic Perspectives*, Federal Reserve Bank of Chicago 1st Q, 2005 (You may download the paper at http://www.chicagofed.org/digital_assets/publications/economic_perspectives/2005/ep_1qtr2005_part3_barlevy.pdf), and answer questions below.
 - a) What is the conventional wisdom highlighted in the beginning of the second paragraph of the first section. Explain it.

- b) Translate the fourth paragraph of the first section.
- c) Summarize the section 2 the original Lucas calculation