

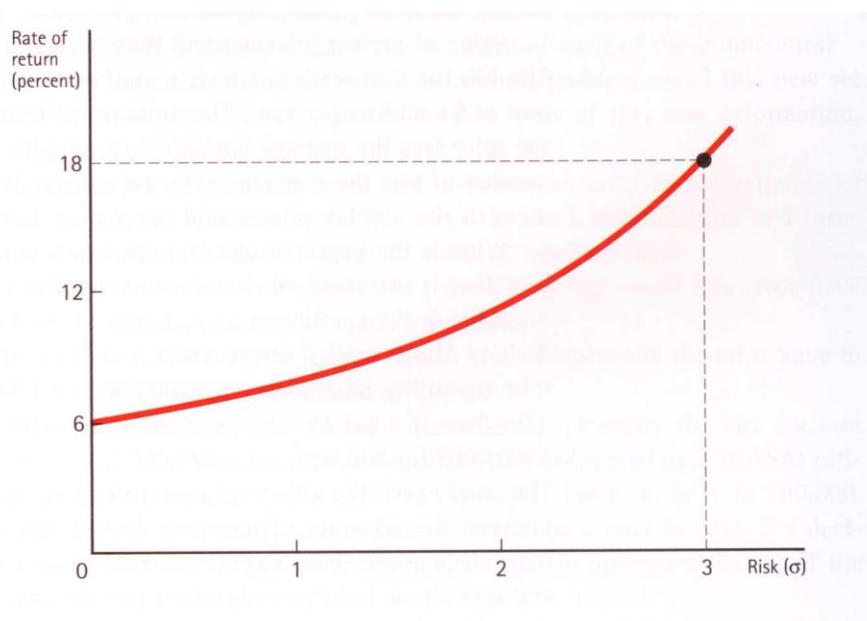
BAYLOR UNIVERSITY
HANKAMER SCHOOL OF BUSINESS
DEPARTMENT OF ECONOMICS

ECO 5315 Chapter 13 Problem Set

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1. (Problem 2, pp. 456-457 in the textbook) William J. Bryan is the general manager of an electrical equipment plant. He must decide whether to install a number of assembly robots in his plant. This investment would be quite risky, since both management and the workforce have no real experience with the introduction or operation of such robots. His indifference curve between expected rate of return and risk is as shown in the figure.



- A. If the riskiness (σ) of this investment equals 3, what risk premium does he require?
 - B. What is the riskless rate of return?
 - C. What is the risk-adjusted discount rate?
 - D. In calculating the present value of future profits from this investment, what interest rate should be used?
2. (Problem 6, page 459 in the textbook) The chief executive officer of a publishing company says she is indifferent between the certainty of receiving \$7,500 and a gamble where there is a 0.5 chance of receiving \$5,000 and a 0.5 chance of receiving \$10,000. Also, she says she is indifferent between the certainty of receiving \$10,000 and a gamble where there is a 0.5 chance of receiving \$7,500 and a 0.5 chance of receiving \$12,500. Is this CEO a risk averter, a risk lover, or risk neutral? Explain.

3. A worker whose utility function $U(W) = \sqrt{W}$ has received a job offer which pays \$80,000 with a bonus. The bonus is equally likely to be \$0, \$10,000, \$20,000, \$30,000, \$40,000, \$50,000, or \$60,000. Assume that initial wealth is \$0.
 - A. What is the expected value of this pay package?
 - B. What is the certainty equivalent of this pay package?
 - C. What is the risk premium?

4. Ken can choose one of two types of swings. He can try either to make contact or swing for the fences. If he tries to make contact, his distribution of outcomes will be (out, 0.65; single, 0.35). If he swings for the fences his distribution of outcomes will be (out, 0.75; double, 0.15; homerun 0.1). Assume his utility for an out is 0 and his utility for a homerun is 1.
 - A. Ken is indifferent between a single with certainty and with a lottery equal to (out, 0.5; homerun, 0.5). What is his utility for a single?
 - B. Ken is indifferent between a double with certainty and with a lottery equal to (single, 0.6; homerun, 0.4). What is his utility for a double?
 - C. If Ken maximizes expected utility, should he try to make contact or swing for the fences? Show your work.
 - D. Ken is indifferent between a lottery equal to (single, 0.5; homerun, 0.5) and a lottery equal to (double, 0.8; triple, 0.2). What is his utility for a triple?

5. An individual with initial wealth of \$400 has a 20% chance of getting in an accident. If he gets in an accident, he will lose \$300, leaving him with \$100; if he does not, he loses nothing. He maximizes expected utility, and his utility function is $U(W) = \ln W$.
 - A. What is the expected amount of money he will lose? What is his expected wealth?
 - B. What is his expected utility?
 - C. What is his certainty equivalent wealth, i.e., the certain wealth level that gives him the same expected utility as his uncertain situation?
 - D. What is the maximum amount he would pay for full insurance coverage, i.e., what is the maximum premium he would pay an insurance company to cover all of his losses?