

Micro Summer: Problem Set 1.

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Every answer is 25 points.

Exercise 1. Solve the Utility Maximization Problem for the following utility functions, for $x \in B(p, w) = \{x \in X | p'x = w\}$.

(a) Cobb-Douglas: $u(x_1, x_2) = x_1^\alpha x_2^{1-\alpha}$

(b) Constant Elasticity of Substitution (CES): $u(x_1, x_2) = \left(x_1^{\frac{\sigma-1}{\sigma}} + x_2^{\frac{\sigma-1}{\sigma}}\right)$.

Exercise 2. For the CES demand function derived in Exercise 1.c compute its Slutsky matrix $S(p, w) = D_p x^{CES}(p, w) + D_w x^{CES}(p, w) x^{CES}(p, w)'$.

a) Check that $S(p, w)$ is symmetric, negative semi-definite, and $S(p, w)p = 0$ (singular in prices).

b) Verify the Homogeneity of degree zero $x^{CES}(p, w)$.

Exercise 3. Read the following chapter from Predictably Irrational from Dan Ariely:

<http://christophe.heintz.free.fr/bgt/Ariely-Predictably-Irrational-Ch3.pdf>

from pages 55-60. Then answer: What is the zero price effect, and why it is not compatible with the Utility Maximization Problem.

Grading: The answer was required to be short, about 2 paragraphs long. The first one should contain a clear answer to the question of what is the zero price effect. The second paragraph should contain a clear revealed preference reasoning to justify the answer. The first paragraph is worth 10 points the second paragraph is worth 15 points.