

Problem Set No. 7

Due by: Friday, October 24

7.1 The utility function of a consumer is written as:

$$u(x, z) = \alpha \log(z) + (1 - \alpha) \log(x - \gamma), \quad 0 < \alpha < 1, \quad (x - \gamma) > 0$$

where z denotes leisure, x is a composite consumption good, and (α, γ) are preference parameters. The consumer gets all her income from working at the wage rate r , she is endowed with a fixed amount of time T , and the price of good x is p .

Set up the appropriate utility maximization problem. Solve for the Marshallian demand functions of the two goods. What happens to demand for leisure if the wage rate increases? Explain.

7.2 Consider the 2-good version of the *Stone-Geary* utility function, as used in problem 4.1:

$$u(x_1, x_2) = (x_1 - \gamma_1)^\alpha (x_2 - \gamma_2)^{1-\alpha}, \quad 0 < \alpha < 1$$

where preferences are defined on the consumption set $X \equiv \{(x_1, x_2) \in \mathbb{R}_+^2 \mid x_i - \gamma_i > 0, \forall i\}$.

Verify that these preferences give rise to expenditure and indirect utility functions of the *Gorman Polar Form*.