

Recitation 11 (November 9th, 2018)

1. Consider an economy with 2 consumers, Alessandro and Beatrice, $i = \{A, B\}$, one private good x , and one public good G . Let each consumer have an income of M . For simplicity, let the prices of both the public and private good be 1. In addition, the utility functions of consumer A and B are:

$$\begin{aligned}U^A &= \log(x^A) + \log(G), \quad \text{for individual } A, \text{ and} \\U^B &= \log(x^B) + \log(G), \quad \text{for individual } B\end{aligned}$$

Assume that the public good G is only provided by the contributions of these two individuals, that is, $G = g^A + g^B$.

- (a) Find Alessandro's best response function. Depict it in a figure with his contribution, g^A , on the vertical axis and Beatrice's contribution, g^B , on the horizontal axis.
- (b) Identify Beatrice's best response function. Depict it in a figure with her contribution, g^B , on the horizontal axis and Alessandro's contribution, g^A , on the vertical axis.
- (c) *Unregulated equilibrium.* Find the equilibrium contributions to the public good by Alessandro and Beatrice, that is, the Nash equilibrium of this public good game.
- (d) *Social optimum.* Find the efficient (socially optimal) contribution to the public good by Alessandro and Beatrice.
- (e) Use a figure to contrast the Pareto efficient level of private provision and the Nash equilibrium level of provision.