

Economics 4905

Financial Fragility and the Macroeconomy

Fall 2018

Problem Set 1

Due before the beginning of class on Monday, September 17, 2018

1 Money Taxation

Consider an economy with a single commodity, $\ell = 1$, chocolate. There are 5 consumers, so $n = 5$. The endowments are defined by

$$\begin{aligned}\omega &= (\omega_1, \omega_2, \omega_3, \omega_4, \omega_5) \\ &= (900, 800, 700, 600, 500)\end{aligned}$$

measured in ounces of chocolate.

1.1 A Single Currency

There is one money, dollars. The chocolate price of money is $P^m \geq 0$. In each of the following cases, solve for the set \mathcal{P}^m of equilibrium prices P^m , given the following tax policies τ , and the set of equilibrium commodity allocations, $x = (x_1, x_2, \dots, x_5)$. Provide the units in which the variables are measured.

- a) $\tau = (\tau_1, \tau_2, \tau_3, \tau_4, \tau_5) = (2, 1, 0, 0, -3)$
- b) $\tau = (10, 5, 0, -8, -7)$
- c) $\tau = (20, 2, 1, -2, -20)$

1.2 Two Monies

Consider a scenario where there are 2 monies, red dollars R and blue dollars B , with respective chocolate prices of money, $P^R \geq 0$ and $P^B \geq 0$.

In each of the following cases, solve for the equilibrium exchange rate between B and R . Do these depend on the endowments ω ? Give the economic explanation for your answer.

For each of the 3 cases, solve for the set of equilibrium allocations.

- a) $\tau^R = (1, 1, 1, 1, -3)$ and $\tau^B = (1, 0, 0, 0, -2)$
- b) $\tau^R = (1, 1, 0, -1, -2)$ and $\tau^B = (1, 1, 1, 0, -2)$
- c) $\tau^R = (3, 2, 1, 0, -6)$ and $\tau^B = (4, 0, -1, -1, -2)$