

Economics 613: Macroeconomics I

Fall 2006

Cornell University

Problem Set #12

Due: Monday, November 27, 2006

1 Bona Fide and Balanced Tax Policy

Static one-good ($\ell = 1$) pure-exchange economy with money taxes and transfers. Four ($n = 4$) consumers.

$$\omega = (\omega_1, \omega_2, \omega_3, \omega_4) = (1, 2, 3, 4),$$

where $\omega_i > 0$ is the endowment of consumer i ($i = 1, 2, 3, 4$).

For each of the following: Is $\tau = (\tau_1, \tau_2, \tau_3, \tau_4)$ balanced? Is τ bonafide? Describe the set of equilibrium money prices for:

- (a) $\tau = (-1, 1, -1, 1)$,
- (b) $\tau = (-4, -2, 2, 4)$,
- (c) $\tau = (3, 3, -3, -3)$,
- (d) $\tau = (1, -2, 1, 2)$,
- (e) $\tau = (0, 0, 0, 0)$.

2 Taxes Denominated in Money, with Two Monies

Static one-good ($\ell = 1$) pure-exchange economy. Three consumers ($n = 3$). Endowments are given by

$$\omega = (\omega_1, \omega_2, \omega_3) = (3, 2, 1).$$

Two currencies, R (for Red) and B (for Blue). Let $p^{mR} \geq 0$ and $p^{mB} \geq 0$ be the goods-price (respectively) of red and blue money.

- (a) $\tau_R = (1, 2, 1)$, $\tau_B = (0, 0, -1)$;
- (b) $\tau_R = (2, -1, -1)$, $\tau_B = (-1, -1, 2)$;
- (c) $\tau_R = (-1, 0, 4)$, $\tau_B = (-1, -1, -1)$;
- (d) $\tau_R = (0, 0, 1)$, $\tau_B = (1, 1, 0)$.

For each case (a) through (d), calculate the set of equilibrium prices of red money, blue money, and the equilibrium exchange rate between the two currencies.

Derive necessary and sufficient conditions for the taxation policy with two currencies to be bonafide (i. e. permit equilibrium in which both money prices are positive). Must the tax policy be balanced currency by currency? Can there be deficits in each currency? Can there be surpluses in both currencies?

When is the exchange rate between red money and blue money uniquely determined? When is this exchange rate indeterminate? Re-interpret your answers in the international context where R = US dollars and B = pounds sterling.