Economics 4905: Lecture 2

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- We are seeking a **seminar** room for ECON 4905. We will keep you posted, but please be alert.
- Update bio needed for at least one student.
- Wall Street

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- Economists
    - Not good at macro-forecasting
    - Good at predicting "unintended consequences"
    - Somewhat good at using theory and data in place of emotions and tribalism

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  - Aggregate variables from national income accounts
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- **Conotation**
  - Money and finance
  - Interest rates
  - Intertemporal
  - Expectations
  - Banking
  - Unemployment
  - And more

This course, ECON 4905

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- $x = (x_1, \ldots, x_h, \ldots, x_n) > 0$ is the vector of chocolate consumption
- $\omega = (\omega_1, \ldots, \omega_h, \ldots, \omega_n) > 0$ is the vector of chocolate endowments

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$$\textbf{MB:} \quad \sum_{h=1}^{n} x_h = \sum_{h=1}^{n} \omega_h$$

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so

$$P^m = 0 \quad \text{or} \quad \sum_{h=1}^{n} \tau_h = 0 \quad \text{or both}$$

Bonafide Taxes and Balanced Taxes

- $\tau = (\tau_1, \ldots, \tau_h, \ldots, \tau_n)$ is said to be *balanced* if we have $\sum_{h=1}^{n} \tau_h = 0$, i.e., if taxes exactly offset subsidies.
- τ is said to be *bonafide* if there is at least one CE in which $P^m > 0$. (In other words, τ is a good faith policy).
- We have shown that if τ is imbalanced, then τ is not bonafide. Every bonafide τ is balanced in this simple finite economy.

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- Define the tax-adjusted endowment $\tilde{\omega} = (\tilde{\omega}_1, \ldots, \tilde{\omega}_h, \ldots, \tilde{\omega}_n) =$ $(\omega_1 - P^m\tau_1, \ldots, \omega_h - P^m\tau_h, \ldots, \omega_n - P^m\tau_n)$.

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- Since $\omega > 0$, for $P^m > 0$ sufficiently small, we have $\tilde{\omega} > 0$. The CE for this $\tilde{\omega}$ (without money) yields $x > 0$ and $\sum_h x_h = \sum_h \tilde{\omega}_h = \sum_h (\omega_h - P^m \tau_h) = \sum_h \omega_h - P^m \sum_h \tau_h = \sum_h \omega_h$. Hence there are $P^m > 0$ in money-tax equilibrium.

Outside Money Taxation: Examples

$$l = 1, n = 6, \omega = (\omega_1, \ldots, \omega_h, \ldots, \omega_6) = (100, 90, 10, 10, 10, 10)$$

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Example 1

$$\tau = (20, 20, -10, -10, -10, -10)$$

$$\sum_h \tau_h = 0 \Rightarrow \tau \quad \text{bonafide}$$

2 guys (Mr. 1 and Mr. 2) are taxed.

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Mr. 1:

$$100 - 20P^m > 0$$
$$20P^m < 100$$
$$P^m < 5$$

Mr. 2:

$$90 - 20P^m > 0$$
$$20P^m < 90$$
$$P^m < \frac{9}{2} < 5$$

$\mathcal{P}^m = [0, \frac{9}{2})$ $\qquad$ $\mathcal{P}^m$ is the set of equilibrium money prices

Example 2

$$\tau = (100, 90, -20, -20, -20, -20)$$

$$\sum_h \tau_h = 100 + 90 + 4(-20) = 110 \neq 0$$

$$\tau \text{ not balanced} \Rightarrow \tau \text{ not bonafide}$$

$$\mathcal{P}^m = \{0\}$$

Example 3

$$\tau = (2, 2, -1, -1, -1, -1)$$

$$\sum_h \tau_h = 4 - 4 = 0$$

$$\tau \text{ balanced} \Rightarrow \tau \text{ bonafide}$$

Mr. 1

$$100 - 2P^m > 0$$

$$2P^m < 100$$

$$P^m < 50$$

Mr. 2

$$90 - 2P^m > 0$$

$$2P^m < 90$$

$$P^m < 45$$

$$\mathcal{P}^m = [0, 45)$$

Example 4

$$\tau = (0, 0, -5, -5, -5, -5)$$

$$\sum_h \tau_h = 0 - 20 = -20 \neq 0$$

$$\tau \text{ not balanced} \Rightarrow \tau \text{ not bonafide}$$

$$\mathcal{P}^m = \{0\}$$

Example 5

$$\tau = (0, 0, 0, 0, 0, 0)$$

$$\sum_h \tau_h = 0$$

$$\tau \text{ balanced} \Rightarrow \tau \text{ bonafide}$$

$$\mathcal{P}^m = [0, \infty)$$

P^m is indeterminate because there are no money trades at any price.

Money Taxation Take-aways:

- In some cases, the equilibrium allocation x is unique, but generally x depends on *consumer beliefs* about P^m.
- Fundamentals do not completely determine economic outcomes. Beliefs are important: this is a basic source of financial fragility.
- Compare to Ben Stein's remark.