



# B.E. International Program

Faculty of Economics, Thammasat University



EE 320 Introductory Mathematical Economics  
Semester 1/2015

## Quiz 1 (b) - Answer

1. (6 points total) Consider the following demand and supply functions

$$Q_D = 60 - P \quad \text{and} \quad Q_S = 24 + 2P$$

Suppose a tax of \$3 per unit is imposed on the producer.

- a. (3 points) Determine the after-tax equilibrium price paid by consumers, the after-tax equilibrium price received by producers, and the after-tax equilibrium quantity.

Ans.  $P_d^* = 14; P_s^* = 11; Q_T^* = 46$

- b. (3 points) Calculate the tax burden per unit on the consumer and the tax burden per unit on the producer. [Note: You need to first determine the before-tax equilibrium price].

Ans.  $P_0^* = 12$

Per-unit tax burden on consumer = \$2

Per-unit tax burden on producer = \$1

2. (4 points total) Let the national-income model be:

$$Y = C + I_0 + G_0 + X_0 - M$$

$$C = C_0 + bY_d, \quad (C_0 > 0, 0 < b < 1)$$

$$Y_d = Y - T, \quad \text{where } T \text{ is a constant}$$

$$M = M_0 + mY_d, \quad (M_0 > 0, 0 < m < 1)$$

- a. (3 points) Given that  $C_0 = 750$ ,  $b = 0.9$ ,  $I_0 = 500$ ,  $G_0 = 300$ ,  $T = 200$ ,  $X_0 = 450$ ,  $M_0 = 300$ , and  $m = 0.2$ , find the equilibrium national income.

Ans.  $Y^* = 8700$

- b. (1 points) Calculate the consumption at the equilibrium level.

Ans.  $C^* = 8400$