

**EC202C1 – Intermediate Macroeconomic Analysis  
Spring 2012, Boston University**

Instructor: Jeremy Smith

**First Mid-term Exam (Practice #2)**

Thursday, February 23, 2012

This is a 50-minute exam. There is a total of 50 points allocated across two questions. Use the number of points allocated to each part as a suggestion for how long to spend on that part. I recommend that you attempt all parts before using more time than is suggested for any one part. If you complete some parts in less than the suggested time, use your extra time to revisit parts you may have had trouble with the first time through and to check your work.

Please read the questions carefully and write your answers in the space provided. You can use the backs of the sheets for scrap paper, but to get full credit you must show all relevant work in the space provided.

Please follow my instructions at all times.

Concentrate and think carefully, but try to relax too!

**Student Number:**

(Please do not include your name.)

1. [28 points total, 4 parts] Consider an economy characterized by the following Aggregate Supply and Aggregate Demand relations:

$$P = P^e(0.5 + 0.0005Y) \quad [AS]$$

$$P = 10 - 0.008Y + 0.01G \quad [AD].$$

a) [4 points]

i. Confirm that the natural level of output is 1000.

ii. If the economy starts in medium run equilibrium with government expenditure of  $G = 200$ , find: the level of output; the actual price level; and the expected price level.

b) [9 points] Now suppose that government expenditure rises to  $G = 400$  and is held at this new level indefinitely.

i. Find the short run equilibrium level of output and the price level that would arise when considering the goods and financial markets only, that is, disregarding any adjustment to the new output level in the labor market.

ii. Find the short run equilibrium level of output and the price level corresponding with simultaneous equilibrium in the goods, financial, and labor markets.

c) [6 points] Start from this short run equilibrium corresponding with simultaneous equilibrium in all markets, and continue to assume that  $G = 400$ . Now suppose that price expectations adjust, such that  $P^e$  becomes equal to the actual price level you found for this short run equilibrium. Find the subsequent new short run equilibrium output and price level. (You can round your answers to one or two decimal places, but you should use four decimal places in your intermediate calculations.)

d) [9 points] Continue to assume that  $G = 400$ . Suppose that the economy has completed its convergence to the new medium run equilibrium.

i. Find the new medium run equilibrium: output level; price level; and expected price level.

ii. Compared to the original medium run equilibrium in which the economy started, in what direction and by how much has Investment changed? Explain.

2. [22 points total, 2 parts] Consider a description of the goods market in which the government imposes a separate income tax and business tax. The income tax  $T_C$  is imposed on consumers only, and the business tax  $T_F$  is imposed on firms only. The following behavioral equations describe the goods market:

$$C = c_0 + c_1(Y - T_C)$$
$$I = b_0 + b_1Y - b_3T_F.$$

Government expenditure is represented by the exogenous constant  $G$  throughout.

a) [11 points]

- i. Derive an expression for output when the goods market is in equilibrium.
- ii. Consider the following statement: "Since the business tax is imposed on firms only, an increase in the business tax will not affect consumption." Is the statement true? Explain your answer briefly.

b) [11 points] Now suppose that the government decides how high to set taxes by establishing a revenue requirement, and that this revenue requirement depends on the state of the economy. Specifically, let the revenue requirement be given by

$$R = a_0 + a_1 Y.$$

Total taxes must be equal to this revenue requirement. Further, suppose that a previous law requires income taxes to be set to zero, i.e.  $T_C = 0$ .

- i. Derive an expression for the short-run equilibrium output level.
- ii. Explain what will happen following an exogenous increase in consumer confidence ( $c_0$ ) as the goods market adjusts and converges to its new equilibrium.